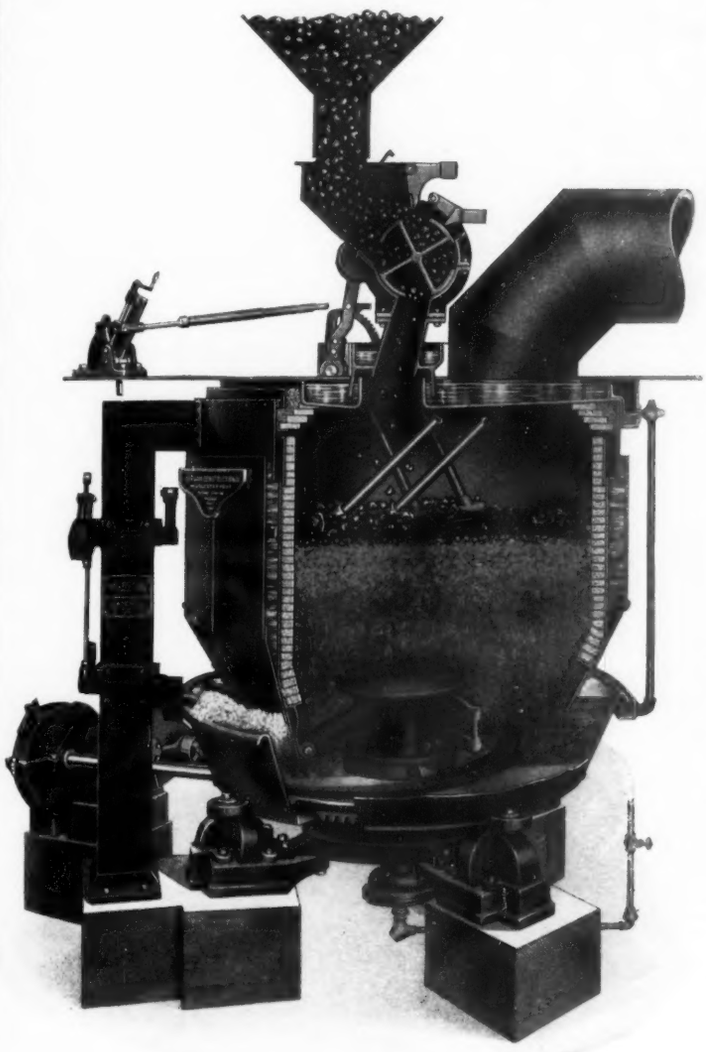
SEP 4 1930

IRON TRADE REVIEW
STEEL

September 4, 1930



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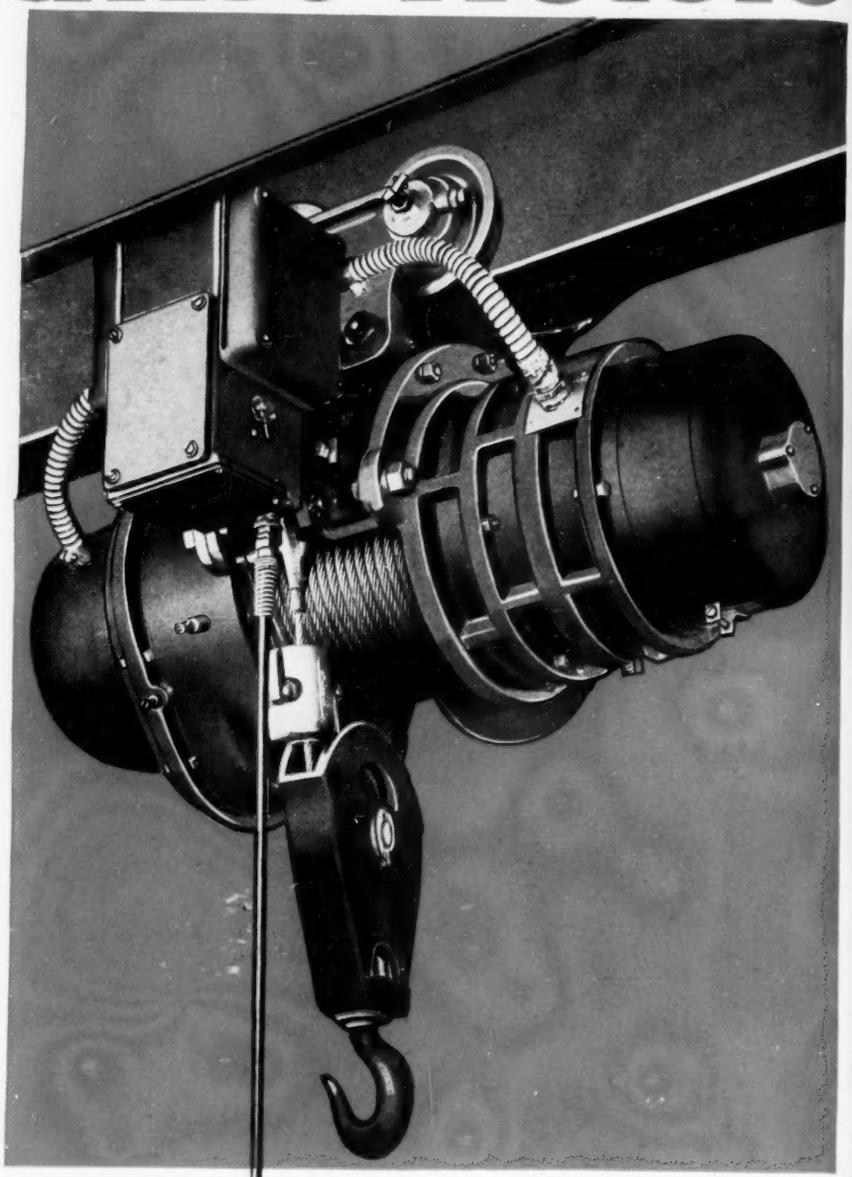

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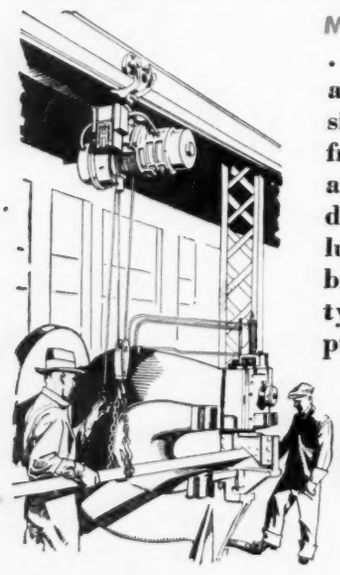

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STEEL

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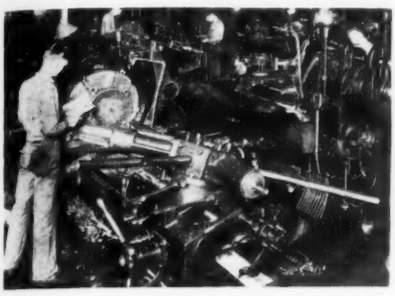

Case-Hardening Steel Parts for Long Wear. Page 43.

## THIS WEEK:

*MACHINE tool builders are displaying considerable interest in the enlarged exhibit descriptive of the machine age, part of the Museums of the Peaceful Arts, to be opened in more spacious quarters at 220 East Forty-second street, New York, this month. The machine tool department eventually will rival some of the international "fairs" featured in European capitals, and there is no reason why it should not surpass them in general interest, as some of the most useful and important machine tools have been developed in this country. An article leads the machine tool department, page 68.*

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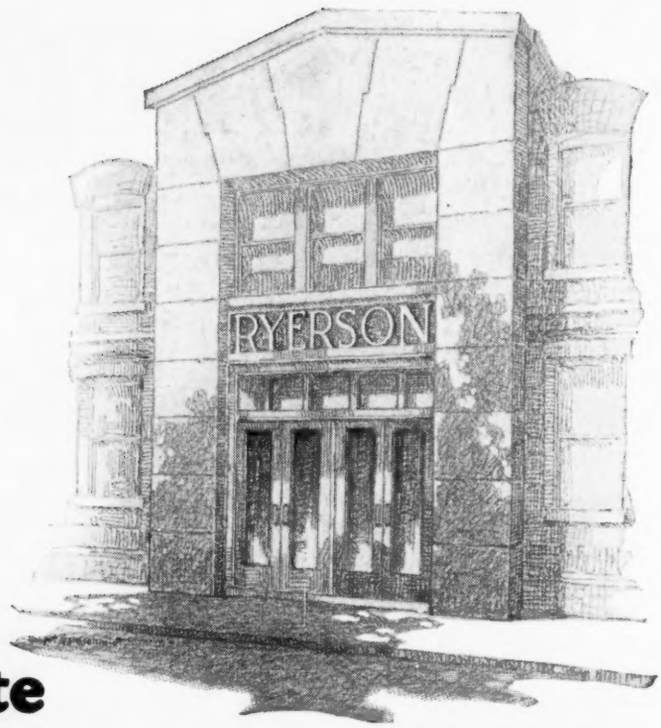


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# RYERSON

## STEEL-SERVICE

Volume 87 Number 10

IRON TRADE REVIEW
STEEL

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

# This Week in Steel

EVERY Sunday and holiday is a day of business depression, but the effect is not severe because it is short. It is the sharpest kind of a V-shaped depression. The type to beware is that with a U shape, having what an economist calls a "floor." In the past 50 years this country has had 15 complete business cycles, an average of one every three and one-third years. Each cycle has four phases: Prosperity, decline, depression and recovery. The "floor" of the present depression is about as long as that of any in the 15 cycles. On the basis of analogy alone, Col. Leonard P. Ayres, of Cleveland, concludes there is strong reason for believing business is on the upgrade. Prosperity always is accompanied by confidence; decline by doubt; depression by actual fear, and recovery by hope. "When we have been afraid of something for a long time and the worst we feared does not happen fear always changes to hope." But there are other important factors why the banker-economist concludes July marked the bottom and the recovery phase has set in (Page 35). . . . One element of the cycle, confidence, runs strongly through all the other phases; the nation's activities are too big and diverse to be "floored" all at one time. Exports of industrial machinery slump, but still for the first seven months of the year, $149,500,000 in value, are the largest since the world's postwar reconstruction period (Page 32).

## Exhibits Exemplify Vitality of Business

The stage is being set for the great National Metal congress and exposition in Chicago, Sept. 22-26 . . . while in New York the development of machinery in this country will be made a permanent feature of the Museums of Peaceful Arts, opening in much larger quarters. "Period" furniture is always in style, and now we are to have an exhibition of "period" machinery. All the obsolete machinery is not yet in a museum; but here there will be working models or actual specimens of typical machines and shop equipment arranged in sequence "with surroundings, accessories and workmen to complete the picture" (Page 68). . . . More than 100 manufacturers each week are visiting the co-operative exhibit of chrome-nickel steel products in New York. Hundreds of articles made of this corrosion-resisting alloy are displayed, in a room paneled and decorated with the same material, everything glistening and gleaming like polished silver. The metallurgists' fairyland is something more than a dream; within ten days of the opening inquiries from visitors represented an amount of the alloy equal to the entire 1929 output (Page 46). . . . New ma-

*International News Photo.*

"Poems in Woven Steel": Eighty per cent of the 57,000 tons of steel going into the 85-story Empire State building, New York, was in place Aug. 1, the framework reaching to the fiftieth story. All the steel is being erected in six months.

terials are being developed with swiftness much like that which characterized mechanism. Yet the history of steelmaking chemistry, the foundation of it all, goes back only 70 years (Page 45).

## Cup Defender a Metallurgists' Creation

ENTERPRISE is an appropriate name for America's cup defender which will race Sir Thomas Lipton's SHAMROCK V Sept. 13. Her frames are of steel, plates of bronze, mast of duralumin, and deck and sail fittings of stainless steel (Page 25). . . . Our Canadian cousins are showing enterprise. At an expense of $114,000,000 and 14 years' effort they have the new Welland canal, a masterpiece of engineering, meaning much to ore, coal, iron and steel shipping, nearly ready for operation. This link between Lake Erie and Lake Ontario provides uninterrupted passage for the largest vessels from Duluth to a point on the St. Lawrence 120 miles west of Montreal. The investment represents a sum nearly twice as large as President Hoover estimates the cost of American participation in the opening of the Great Lakes to the Atlantic (Page 26). . . . If you had at your service all the trade mark and advertising experts you wanted, to make for you the very best trade mark that could be devised, what would you think if they finally turned out something as simple as "U S Steel." There are many points to consider in adopting a trade mark. After a year's deliberation and planning, the Steel corporation for the first time in its history decides on an identification mark for all its own and subsidiaries' products (Page 29). . . . Durability of case-hardened steel parts depends upon the depth of the case. Ordinarily the hardness decreases away from the surface; however, one manufacturer claims to produce a uniform hardness throughout the depth. Cases from 3/16 to ¼-inch can be obtained by this method (Page 43).

## Gain Votes with Unemployment Insurance

Unemployment insurance becomes a stronger political issue in some states. Candidates capitalize misfortune; a man out of work is a potential voter for a man promising help. A large proportion of the aspirants for the Michigan legislature, estimated by one authority as "one out of two," are committing themselves to such a policy (Page 29). . . . In Canada and Great Britain strategy dictates a different course. Ninety-three per cent of the dominion's iron and steel imports come from the United States, valued in 1929 at $309,400,000. A special session of parliament is called to consider means for relieving unemployment, and an emergency measure proposes to increase duties on iron and steel products (Page 26). . . . Sheet and tin plate mill wages, responsive to prices, decline 4½ per cent (Page 79) . . . while bar iron mill wages move to the lowest point since 1922 (Page 29). . . . Employment in iron and steel plants in the United States in July was 4.4 per cent lower than in June; weekly payroll totals dropped 14.5 per cent, according to the current report from the bureau of labor (Page 79). . . . On authority of the International Federation of Trade Unions the latest count shows organized workers in the world number 44,190,525, or 4.3 per cent less than in 1927. Europe has 35,392,000; United States 4,443,523, our group representing about 9 per cent of our working population (Page 29).

## Replogle Diagnoses Britain's Trouble

It must have taken some courage for J. Leonard Replogle to tell British steelmakers their industry is deteriorating through too much inbreeding or "family management." He was engaged by them to propose a comprehensive plan for rehabilitation. One of the first things he advises is to "junk" most of the blast furnaces. France, he finds, leads the world in steel exports (Page 24). . . . Fire in the Federal Trade commission's building in Washington, damaging valuable records and causing a loss of $150,000 emphasizes the need of steel filing cabinets. Press reports refer to the "cheap wooden cases" used as a repository for public records (Page 34). . . . John S. Oursler, vice president, Carnegie Steel Co., resigns because of ill health (Page 31).

## Longevity of Steel Suggests More Uses

Experience with steel confirms the work of the chemist, the metallurgist and the mill. Structural members far outlive the usefulness of the buildings of which they are part. Those in the Waldorf-Astoria hotel, New York, recently razed, after 39 years of service, show almost perfect preservation, like those in the Tacoma building, Chicago, which was torn down after 42 years. Corrosion in exposed parts of the Waldorf-Astoria steelwork amounts to less than 1 per cent (Page 50). . . . With such longevity it is believed steel has a larger field of usefulness in road construction, in which $3,000,000,000 is expended annually in this country. Tests are being made in Springfield, Ill., with refined iron sheets and plates as a base for brick pavement, brickmakers co-operating (Page 25). . . . In addition to the heavy requirements for pipe, steel is gaining rapidly as a material for general construction in the oil producing industry. Here it has been used mainly for derricks, bull wheels and tanks; now it is supplanting wood for engine foundations, 300 wells being so equipped recently, taking a substantial tonnage (Page 62).

# Action on Merger Too Hasty, Says W. G. Mather

THE trial to prevent the Bethlehem Steel Co.-Youngstown Sheet & Tube Co. merger has entered its tenth week. George O. May, senior partner, Price, Waterhouse & Co., New York, accountants, again resumed the stand and retold many details that other witnesses have spoken of regarding the March 11 meeting at Cleveland of officers of both companies and others, including Mr. Eaton.

Mr. May testified that all during this meeting, featured by its "fire escape" ending, Mr. Eaton insisted upon delay by the Sheet & Tube directors in acting on the merger proposition.

Cyrus Eaton completed his fourth day on the stand last Wednesday.

Last Thursday Judge Jenkins surprised the lawyers by asking if they would bring into court for questioning both William G. Mather, president, Cliffs Corp., and partner of Mr. Eaton therein, and his nephew S. Livingston Mather, who represents Cliffs Corp. on the Sheet & Tube board, and who also is a son of Samuel Mather, head of Pickands, Mather & Co. Neither side had planned to have the Mathers testify, but finally "as officers of the court" they agreed to convey the court's wishes to the Cleveland men. Friday morning William G. Mather appeared in court, but the nephew was excused from attending because of the serious illness of Mrs. Mather. The court thanked Mr. Mather for himself and "the state of Ohio" for coming in voluntarily since he had no power to compel his appearance under subpoena.

### Mather Tells His Story

Mr. Mather told that he first learned of the Sheet & Tube-Bethlehem merger proposals on Feb. 23 this year when he landed in New York with his brother, Samuel, from a trip to the West Indies. There he was told of the merger proposals by H. G. Dalton, of Pickands, Mather & Co. who had gone to New York for the purpose. Mr. Dalton said the tentative terms of exchange were 1 1/5 shares of Bethlehem for one share of Sheet & Tube, but they hoped to obtain more satisfactory terms. The terms finally were raised to 1 1/3 shares of Bethlehem. Tacitly it was agreed to that Mr. Dalton was to tell Mr. Eaton about the proposals, but Mr. Eaton then was in the South and he was not told until March 7 at a meeting for the purpose called in the witness' office.

At that meeting Mr. Eaton expressed the utmost surprise when informed by Mr. Dalton of the Bethlehem proposals, saying they were unfair to Sheet & Tube and he had supposed the Inland-Sheet & Tube merger was going through. The witness said the emphatic opposition of Mr. Eaton to the Bethlehem merger so absorbed his attention that about all the detail he remembered was Mr. Eaton's plea for delay for a few weeks to consider the terms.

The directors of Sheet & Tube were to meet within two or three days to approve the terms, but this action was deferred several days. Meanwhile another meeting was arranged for March 11 at Cleveland at which Mr. Eaton, the Mathers, E. G. Grace and other Bethlehem officers, James A. Campbell and other Sheet & Tube officers, discussed the merger terms. The witness said he urged delay in the directors' meeting until more consideration could be given to the terms, but Samuel Mather who was presiding said: "We have heard enough about that." Afterward the witness took no part in the discussions. The witness stated he considered the merger plan was acted on too hastily.

Ferdinand Eberstadt, New York partner of Otis & Co., testified in detail of the several meetings at Cleveland on the merger. He said Mr. Eaton was emphatic in his opposition to hurrying through the merger without further study, and witness himself argued with those present in the effort to dissuade them from what he considered precipitate action, but without success.

The date of effectuating the Bethlehem-Sheet & Tube merger was again postponed Friday for a further period of 30 days by Eugene G. Grace, president of Bethlehem, and James A. Campbell, chairman of Youngstown in accordance with the contract ratified by the stockholders on April 8th.

Until the injunction suit now being heard in common pleas court here is disposed of the contract can not be made effective but its continuance must be decided at every expiration date.

## Steel and Equipment Let For Canadian Power Plant

Beauharnois Power Corp., Toronto, Ont., has placed orders for steel and machinery with several Montreal firms. Dominion Bridge Co. received an order for 2100 tons of structural steel, for the power house, 1250 tons of steel for the trash racks and frames, two 200-ton power house cranes, and two 150-ton gantry cranes for the power house bulkhead. Canadian Vickers was awarded the order for the head gates and guides, 2600 tons. The 4000 tons of reinforced steel for the building has been divided between the Canadian Car & Foundry Co., Pecks Rolling Mills, Steel Company of Canada, and Canadian Tube & Steel Products.

*FORD'S BRITISH UNIT "LARGEST PLANT OUTSIDE UNITED STATES"*

*The new manufacturing establishment of the Ford Motor Co. Ltd., will occupy a 300-acre site at Dagenham, on the Thames. It will cost $25,000,000 and have capacity for manufacturing 200,000 cars annually. Iron ore from Newfoundland will be shipped for use in blast furnaces, under construction. The illustration gives a glimpse of the vast expanse of buildings now being erected. Heretofore, Ford has assembled cars in Manchester. Machinery has been installed for increasing capacity at the plant in Cork, Ireland, for 40,000 tractors annually*

# Obsolete British Steel Mills Look to Replogle Reform

AT THE request of British steel operators, J. Leonard Replogle, retired American steel magnate, has prepared a report for the British steel industry embodying drastic recommendations to relieve Britain's decline in iron and steel production, and aimed to restore her to world prominence.

Construction of a 3,000,000-ton ingot producing steel unit, a model modern unit worked out in detail by American technical engineers, is incorporated in his report. Though actual construction is in a preliminary stage of planning, the main plant, at a cost of $300,000,000, is expected to be located at the English or Welsh seaboard, convenient to the latters' large steel consuming areas, and as well to British export markets.

**Cites Britain's Decline**

Great Britain has exported an average of 3.800,000 tons of steel over the three years prior to 1929, but during that time has imported roughly 3,700,000 tons of steel. Its export balance was therefore less than 100,000 tons and represented almost a 100-per cent decline from pre-war figures. France, on the other hand, through acquired properties since 1919 in Alsace and Lorraine, has become the world's greatest steel exporter and in the above mentioned three years has shown a favorable trade balance of almost 5,000,000 tons yearly, which represents an increase of nearly 1000 per cent over pre-war conditions. Germany, a third factor today in European steel circles, while declining from her condition of 1913 in exports and imports of steel, showed a fall of only about half of Britain's.

The stagnation in steel circles in Britain is apparent and though the United States from its more fortunate possessions of iron ores and coal will in all probability continue the world's production leader, Britain is well endowed with ore, coal and limestone resources. So, it is within the reach of British operators to regain their lost position, fundamentally speaking.

However, conditions as they exist are far from conducive to proper and modernized management. Mr. Replogle hits at the British decline by advancing the statement that "one of the principal reasons is family management, which works for inefficiency and destroys the ambition and incentive of the worker in the ranks. . . . further, in its ultra-conservatism in failing to keep abreast of the times in installation of efficient manufacturing methods and of persisting in regarding obsolete plants as assets when in reality they are liabilities."

"American production of half the world's steel with the highest wages on any country is due not so much to natural advantages as to the aggressive management and introduction of the most modern and efficient methods of mass production." The report details that "blast furnace operation in England is the weakest chain in the link, statistics showing that average pig iron output per furnace is only 120 tons daily." Contrasted to this are, in every instance, higher rates in Continental countries and a 600-ton daily rate by United States pig iron producers, where the newest and largest stacks can pour as high as 1200 tons daily.

The Replogle report, which has been obtained by the *Chicago Tribune*, makes sweeping recommendations in addition to the model steelworks urged to be constructed. Not only should practically all English blast furnaces be scrapped and substituted with ones of larger capacity but coke ovens should be equipped with modern by-product recovery plants and a material saving on the production of coke realized.

The bulk of Great Britain's imports are in semifinished steel products and in the proposed reconstruction and rehabilitation program greater attention is urged toward these lines in preference to plates, shapes and bars, thus afforing least disturbance to existing finishing mills.

Britain is reminded by the Replogle findings that there is a direct correlation between civilization's advance and the increasing per capita consumption of steel, that national defense finds its backbone in the steel production of a country, and that collateral industries to the steel industry may be expected to prosper with completion of the report's recommendations.

## Nations' Ingot Output Shown

| | 1913 | Per cent. Total | 1928 | Per cent Total | Per cent Change 1913-28 |
|---|---|---|---|---|---|
| United States | 31,301,000 | 42 | 51,400,000 | 48 | + 64 |
| Germany | 18,652,000 | 25 | 14,000,000 | 13 | — 25 |
| France | 4,614,000 | 6 | 9,170,000 | 85 | + 99 |
| Great Britain | 7,644,000 | 10 | 8,459,000 | 8 | + 11 |
| Belgium, Luxemburg | 2,428,000 | 3 | 6,395,000 | 6 | +163 |
| Russia | 4,181,000 | 5.5 | 4,150,000 | 4 | ..... |
| Canada | 1,043,000 | 3.5 | 1,230,000 | 1 | + 18 |
| Austria | 2,585,000 | 3.5 | 630,000 | .5 | — 75 |
| Italy | 919,000 | 1.5 | 1,950,000 | 2 | +111 |
| Japan | 300,000 | ..... | 1,680,000 | 1.5 | +460 |
| Other countries | 1,020,000 | 9 | 8,146,000 | 7.5 | ..... |
| Total (tons) | 74,687,000 | 100 | 107,210,000 | 100 | ..... |

## Falcon Tin Mill Bought By Davey Interests

W. H. Davey, chairman of the board of the Empire Steel Corp., Mansfield, O., with his brother, Samuel Davey, and W. R. Jenkins, both connected with Empire, are forming a company to take over the plant formerly occupied by the Falcon Tin Plate Co. at Canton, O. The organization is under way and definite announcement will be made shortly. The intention is to devote the mill to production of tin plate and specialties. The plant is being put in condition for operation at an early date.

The plant was operated by the Carnahan Tin Plate & Sheet Co. until 1922, when it was taken over by the Falcon Tin Plate Co. and later was bought by the Canton Rolling Mills Corp. The latter has sold it to the new interests.

It has four 28-inch sheet mills, eight 26-inch cold mills, and nine hot black plate mills. Ample furnace capacity is also provided. Annual capacity is 32,000 tons of block plate for tinning, 720,000 base boxes of coke tin plate and black plate specialties in tin mill sizes.

## Alloy Orders Increase

Improvement in orders for alloy steel from the automobile trade over the past week is reported by the Republic Steel Corp., Youngstown, O. This increase is viewed by Republic officials as an indication of a gain in motorcar output for the last quarter. August orders for some large manufacturing conditions in the automotive industry six to eight weeks ahead, were the largest for any month this year. Tin plate business affords full operation of the company's mills at Warren, O.

# Larger Steel Markets in Road Work; New Base for Brick Pavement Tested

HIGHWAY construction, one of the largest industries in the United States, is one of the smallest consumers of steel and iron. Expenditures by the federal government, states and municipalities for road building and maintenance are about $3,000,000,000 annually. The amount of steel consumed in construction of highway and highway bridges last year amounted to 364,800 tons, about 1.01 per cent of total steel consumption. As a large portion of the expenditures are for repairs to foundations and to surfaces damaged because of inadequate foundations many experiments have been made with iron and steel in other forms than reinforcing rods.

The National Paving Brick Manufacturers' association is co-operating in an experiment in Springfield, Ill., in which refined iron base is used as a foundation for surface material. It will have a carefully rolled and prepared subgrade on which the iron base and curb will be laid. Next will follow a mastic sand cushion upon which will be placed a layer of 2½ or 3-inch brick with asphaltic filler poured into the interstices between the bricks. The result, it is declared, will be an indestructible base with flexibility to meet all changes in temperature.

### Corrugated Sheets Tried

The iron base will consist of three 50-foot sections. One will be blue annealed flat sheets and the other two galvanized and corrugated sheets. The corrugations in one 50-foot section will be parallel to the road and in the other they will be transverse. The flat iron base will be ¼-inch thick, and the corrugated galvanized will be No. 10 gage.

The blue annealed section is so designed that two sheets laid end to end will span the highway. Expansion and contraction in this section will be provided for along the center line where the end of one sheet will be laid on the edge of the adjoining sheet to provide free movement. One transverse edge will be turned down to grip the roadway, whereas the other edge lying transverse to the road would be supported upon the adjoining plate section to provide free movement for contraction and expansion. The end of the plate section at the edge of the highway pavement will be turned up to form a retaining wall for the brick or other paving material. Turning up the edges of the horizontal sheet gives rigidity. In the other two sections, rigidity is obtained by the corrugations.

In the sections where the corrugations of the galvanized sheets run parallel to the highway, the outer sheet edges will be turned up to retain the brick or other paving material. One edge of each other sheet will be turned down to grip the roadway, while the other edge will be lapped one corrugation on the adjoining sheet. A T-bar will be used under each transverse joint.

Where the corrugations run transversely, an ell 16 feet 8 inches long will be welded along the outer edge of the sheet to retain the brick or other paving material. The ell is welded on to the sheet because of the difficulty experienced in bending the sheets against the corrugation. The sheet ends on the center line of the highway will be laid on a T-bar. One transverse edge of each sheet will be turned down to grip the roadway, while the other edge will lap on the adjoining section, as previously explained. The base will be ingot iron rolled and fabricated by the American Rolling Mill Co., Middletown, O.

## Ryersons Offer Lecture On Stainless Steel

A meeting to discuss various types of stainless steel and demonstrate advanced methods of fabricating and welding these alloys will be held at the plant of Joseph T. Ryerson & Son Inc., Front and Freeman streets, Cincinnati, Sept. 11 at 2 o'clock. Griswold Van Dyke, Chicago, general manager of the special steel department of the Ryerson organization, will preside and deliver an address. The meeting is open to all desiring to obtain late information on these materials.

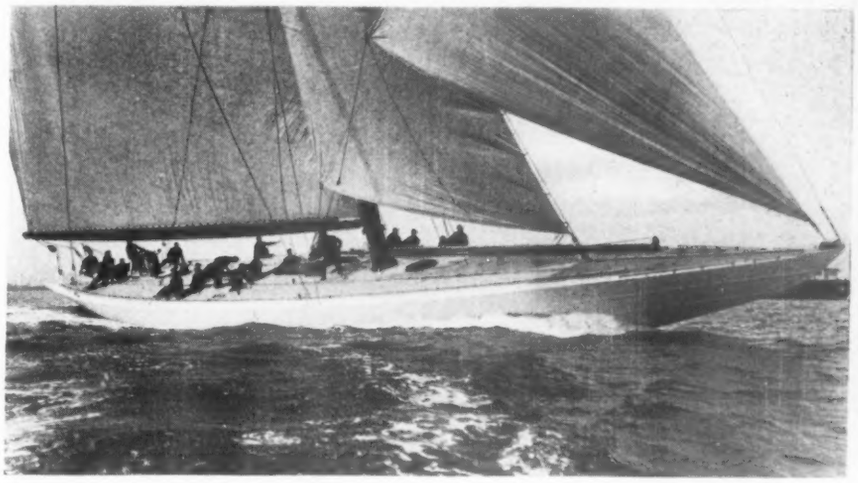
## Governor of Federal Reserve Board Resigns

Roy A. Young, governor of the Federal Reserve board since 1927, has tendered his resignation to President Hoover, and will succeed the late W. P. G. Harding as governor of the Federal Reserve bank of Boston. Mr. Young gave as his reason the necessity of seeking a position paying him more than $12,000 a year. He said he had been unwilling to leave his post while the credit situation of the country was strained or disturbed, but now it is "in an easy and exceptionally strong position." His resignation was effective Sept. 1. The President has not appointed his successor.

## Trade Commission Still Checking Price Base Data

Washington—In connection with the price base investigation being made by the federal trade commission, tabulation of invoice records and data obtained from various sources is being continued.

The review and checking of methods of selling geographically, that is f.o.b. origin and f.o.b. destination, has been substantially completed.



*STEEL AND ALLOYS IN AMERICA'S CUP DEFENDER*

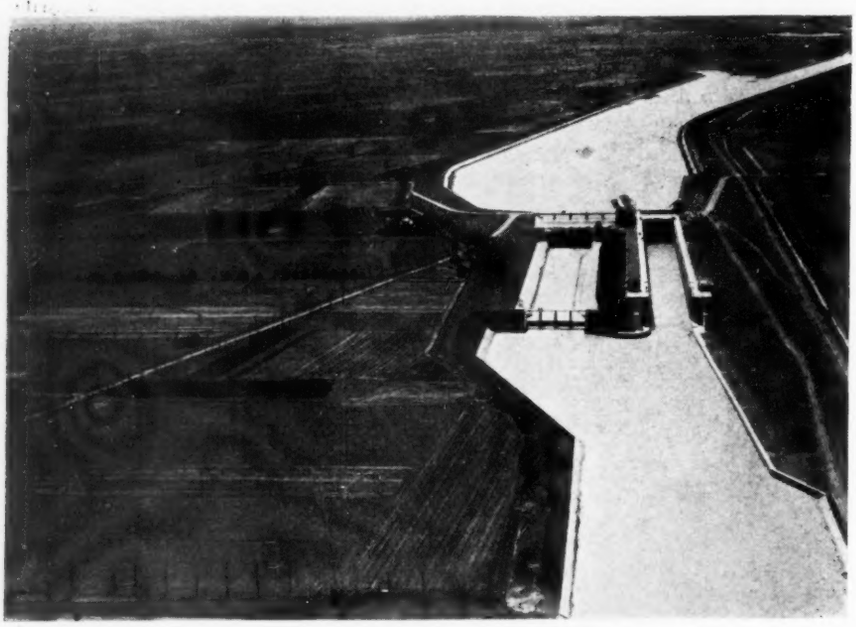
*Unlike the earlier types of racing sloops the modern yachts are made of metal. The* ENTERPRISE, *selected to race Sir Thomas Lipton's* SHAMROCK V *off Newport, R. I., Sept.* 13, *has steel frames, though the "skin" of the hull is made of long bronze plates. Practically all of the deck fixtures are of stainless steel alloy, containing* 18 *per cent chromium, cast at the Lebanon Steel Foundry, Lebanon, Pa. The mast,* 168 *feet, is exceptionally high for a yacht only* 127 *feet overall, and it is made of duralumin, the same material which enters extensively into the construction of dirigibles*

# Foreign Countries Placing Larger Share of Their Orders in United States

THROUGHOUT the world countries are buying a larger share of their foreign purchases from the United States than before the war. These purchases, with the exception of those of the Far East, consist more largely of manufactures than ever before. A survey by the National Industrial Conference board indicates that exports of the United States are likely to be less affected than those of European countries by industrial progress in the less developed countries of the world. Aside from the refining of the crude products of their extractive industries, countries ambitious to develop fabricating industries as a rule promote the manufacture of simple articles which have the broadest local market. An analysis of the import trade of such countries reveals that, except in the case of Canada, they have been buying commodities of this character chiefly from Europe rather than from the United States. On the other hand, the industrial program of these undeveloped countries requires machinery and equipment which they cannot profitably manufacture themselves and which can often be bought to advantage in the United States. A study of United States exports indicates that other countries turn to his country chiefly for its machines, productive equipment, and somewhat less generally, for other kinds of iron and steel products. The general effect of fostering home industries in backward countries will be to discourage purchases of the goods bought most extensively from Europe, and to encourage purchases of the goods bought most extensively from the United States.

The United States has a wide range of products to offer for export, especially machinery, automobiles and other iron and steel products, but the products which specific countries demand differ considerably. Europe, having already reached industrial maturity, turns to the United States chiefly for foods and materials. Of our exports of fabricated articles, Europe takes almost a quarter, but Europe's annual purchases per capita amount to about 60 cents and Great Britain's to about $3, compared with Canada's per capita purchases of almost $30, Cuba's $25, and Argentina's $10.

"The element of distance from the United States," the board reports, "is an important factor for consideration, and political ties are also important in some instances. Our neighbors in North America and the northern part of South America buy half to three-quarters of their import requirements from the United States; countries farther south, where the difference in distance from European and from North American ports is relatively much less, buy only 25 per cent to 30 per cent of their total imports from this country. Japan and Australia also fall into this range, but India and the East Indies supply less than 10 per cent of their needs from the United States.



*WELLAND CANAL NEARLY READY: GREAT ENGINEERING FEAT*

*Formal opening of the canal, connecting Lake Erie and Lake Ontario, which was to have been clebrated Sept. 1, was postponed, due to delay in installing a steel pontoon gate lifter, and snubbers at some of the locks. Work on the canal has been under way 14 years, and to date $114,000,000 has been spent by the Canadian government. The difference in lake levels is 326 feet, and vessels are lifted by means of eight locks. Three of these, in step, have an aggregate lift of 139 feet. The canal is 27.7 miles long, and will accommodate the largest of Great Lakes freighters and 95 per cent of ocean-going vessels. The illustration shows the locks nearest Lake Ontario. The upper reaches of the St. Lawrence, between Montreal and Lake Ontario, now are the only barriers for the largest vessels between the Great Lakes and the sea*

## Canadian Steel Imports Mainly From United States

Toronto, Ont.—Imports of iron and steel and their products into Canada during 1929 were valued at $342,480,427, compared with $322,963,610 in 1928. Over 93 per cent, or $309,421,260, of the total imports last year came from the United States and only 7 per cent or $22,272,090 were from the United Kingdom. Exports in 1929 reached a total of $90,101,565, against $70,665,677 in 1928.

The production of iron and steel and their manufactures in Canada in 1929 was valued at $732,390,039. The total was 20 per cent above $609,632,999 for 1928, and also exceeded in value the output for any previous year. Capital employed was reported as $750,266,636; the number of employes was 130,762; salaries and wages totaled $185,343,062.

The largest gains were in the rolling stock industry, with a production valued at $126,382,788 as against $73,422,057 in 1928, and the automobile industry, advancing from $15,000,000 to $177,315,593. The value of primary iron and steel advanced from $7,000,000 to $68,728,126; castings and forgings, $12,000,000 to $93,555,197; agricultural implements, $6,000,000 to $47,306,894; machinery, $6,000,000 to $57,283,618; wire and wire goods, $1,000,000 to $20,057,655; sheet metal products, $2,000,000 to $51,910,492; hardware and tools, $2,000,000 to $27,315,966.

## Canada Proposes Higher Tariff To Aid Employment

Toronto, Ont.—A special session of the Canadian parliament has been called for Sept. 8, when measures for the relief of unemployed will be considered, including an emergency tariff adjustment. This measure, which is intended to encourage and enable industries to increase their activities and provide more employment proposes an upward revision of some of the iron and steel items.

# August Pig Iron Rate Lower but Drop Is Less Severe

ALTHOUGH production of coke pig iron in August continued on the decline started last May, the drop was the least severe of any month during the four-month period, giving rise to the belief that the low point has been reached or is close at hand. The further reduction in operations in August followed a decline in July which was one of the most drastic in history. In that month 18 blast furnaces went out of production; in August 7 more were added to the inactive list, reducing the total to 137 and the lowest number since January, 1922.

**AVERAGE DAILY PRODUCTION**

| | 1930 | 1929 | 1928 | 1927 |
|---|---|---|---|---|
| Jan. | 91,573 | 110,742 | 92,113 | 100,043 |
| Feb. | 101,640 | 114,942 | 99,954 | 105,021 |
| Mar. | 104,930 | 119,662 | 103,199 | 112,326 |
| Apr. | 106,371 | 122,106 | 106,066 | 114,146 |
| **May** | **104,564** | **125,753** | **106,219** | 109,388 |
| June | 97,817 | 123,887 | 102,745 | 102,991 |
| July | 85,110 | 122,016 | 99,120 | 95,311 |
| Aug. | 81,585 | 120,845 | 101,193 | 95,183 |
| Sept. | ..... | 116,548 | 102,120 | 92,750 |
| Oct. | ..... | 115,747 | 108,824 | 90,710 |
| Nov. | ..... | 106,081 | 110,155 | 88,728 |
| Dec. | ..... | 91,513 | 108,702 | 87,039 |
| Ave. | 96,593 | 115,808 | 103,365 | 99,422 |

Pig iron was made at the daily rate of 81,585 gross tons in August, which, compared with the 85,110-ton rate of the preceding month, was a loss of 3525 tons, or 4.14 per cent.

**MONTHLY PRODUCTION**

| | 1930 | 1929 | 1928 |
|---|---|---|---|
| Jan. | 2,838,751 | 3,433,028 | 2,855,515 |
| Feb. | 2,845,937 | 3,218,376 | 2,898,668 |
| Mar. | 3,252,822 | 3,709,518 | 3,199,175 |
| April | 3,191,119 | 3,663,167 | 3,181,975 |
| May | 3,241,477 | 3,898,344 | 3,292,790 |
| June | 2,934,508 | 3,715,104 | 3,082,340 |
| July | 2,638,441 | 3,782,511 | 3,072,711 |
| Aug. | 2,529,148 | 3,746,198 | 3,136,995 |
| Total 8 mos. | 23,472,203 | 29,186,246 | 24,720,069 |
| Sept. | ..... | 3,496,454 | 3,063,593 |
| Oct. | ..... | 3,588,146 | 3,373,539 |
| Nov. | ..... | 3,182,420 | 3,304,656 |
| Dec. | ..... | 2,836,917 | 3,369,784 |
| Total | ..... | 42,270,183 | 37,831,741 |

One year ago the rate was 120,845 tons per day. It is necessary to go back to October, 1924, with 79,410 tons per day to find a rate lower than that for August. For eight months of 1930, average daily production has been 96,593 tons, against an average of 115,808 tons for all of 1929.

Total production of iron in August was 2,529,148 gross tons, or 109,293 tons less than the 2,638,441 tons of the previous month. Both July and August were 31 day months. In August, 1929, production was 3,746,198 tons. For the first eight months of the current year output has aggregated 23,472,203 tons, a figure which is to be compared with 29,186,246 tons in the comparable period of 1929 and 24,720,069 tons in the like period of 1928.

The August production was made up of 496,712 tons of merchant iron and 2,032,436 tons of steelworks or nonmerchant iron.

**RATE OF OPERATION**

(Relation of Production to Capacity)

| | 1930† | 1929* | 1928‡ |
|---|---|---|---|
| January | 65.0 | 79.0 | 66.8 |
| February | 72.1 | 82.2 | 72.5 |
| March | 74.5 | 85.5 | 74.8 |
| April | 75.4 | 87.4 | 76.8 |
| May | 74.2 | 89.8 | 77.0 |
| June | 69.3 | 88.5 | 74.4 |
| July | 60.3 | 87.2 | 71.8 |
| August | 57.8 | 86.4 | 73.3 |
| September | ..... | 83.3 | 74.1 |
| October | ..... | 82.6 | 78.9 |
| November | ..... | 75.8 | 79.8 |
| December | ..... | 65.5 | 78.8 |

†Based on capacity of 51,490,790 tons Dec. 31, 1929; *on capacity of 51,069,895 tons; ‡on capacity of 50,329,750 tons. Capacities by American Iron and Steel institute.

Operations, calculated by relating production to potential capacity, were 57.8 per cent in August, compared with 60.3 per cent in July and 86.4 per cent in August one year ago.

Active blast furnaces on Aug. 31 totaled 137, against 144 on July 31 and 162 on June 30. During the month 1 merchant stack was blown in and 3 were blown out or banked. Of the steelworks class, 2 were blown in and 7 were blown out.

Furnaces blown in during the month were: In Pennsylvania: Palmerton No. 2, New Jersey Zinc Co.; one Donora, American Steel & Wire Co. In Colorado: One Minnequa, Colorado Fuel & Iron Co.

Among the stacks blown out or banked were: In Pennsylvania: Palmerton No. 1, New Jersey Zinc Co.; Cambria D and Cambria L, Bethlehem Steel Co.; one Eliza, Jones & Laughlin Steel Corp.; Neville Island, Davison Coke & Iron Co. In Ohio: Lorain No. 4, National Tube Co.; one Cleveland, Otis Steel Co.; Canton, Republic Steel Corp. In Illinois: One South Chicago, Wisconsin Steel Co. In Alabama: Fairfield No. 5, Tennessee Coal, Iron & Railroad Co.

**AUGUST PIG IRON PRODUCTION**

| | No. in blast last day of month August | July | Total tonnage made Merchant | Non-chant |
|---|---|---|---|---|
| Ohio | 30 | 33 | 82,973 | 486,983 |
| Penn. | 45 | 48 | 63,393 | 745,471 |
| Alabama | 13 | 14 | 108,719 | 82,981 |
| N. Y. | 9 | 9 | 66,735 | 77,138 |
| Illinois | 12 | 13 | 85,781 | 176,696 |
| Colorado | 2 | 1 | | |
| Indiana | 9 | 9 | | |
| Maryland | 4 | 4 | 29,796 | 296,818 |
| Virginia | 1 | 1 | | |
| Wis. | 0 | 0 | | |
| Kentucky | 1 | 1 | | |
| Mass. | 1 | 1 | | |
| Tenn. | 0 | 0 | 18,831 | 92,039 |
| Utah | 1 | 1 | | |
| W. Va. | 3 | 3 | | |
| Mich. | 4 | 4 | | |
| Minn. | 2 | 2 | 35,084 | 53,401 |
| Missouri | 0 | 0 | | |
| N. Jersey | 0 | 0 | | |
| Spiegel and ferro—all states | .... | .... | 5,400 | 20,909 |
| Total | 137 | 144 | 496,712 | 2,032,436 |

## New York Buys Varied Steel and Metal Needs

New York—A. P. Smith Mfg. Co., East Orange, N. J., was low bidder on hydrant and gate valve parts, department of water supply, gas and electricity, New York, Aug. 28 with $6929. Muller Co. Inc., Bronx, N. Y., was low on corporation cocks, including tail pieces, with $2761.

S. Weinstein Supply Co., New York, was low on flat soft steel and round iron bars for the department of parks. The same company was low on toncan metal, iron and steel, for the department of plants and structures, including a small tonnage of galvanized sheets. Most tonnage for fourth quarter requirements for plants and structures, however, brought a low bid from Fremen & Co., New York. Steel angles, steel plate and machinery steel were being included.

## Drawback Is Broadened

Washington—Treasury decision of February, 1930, providing for drawback allowance on steel produced by Jones & Laughlin at its plants at Pittsburgh and Aliquippa, Pa., with the use of ferromanganese produced from imported manganese ore by firms operating under drawback regulations has been amended to provide for drawback on steel produced from imported ferromanganese.

A treasury decision issued in November, 1927, as extended in November, 1929, providing for drawback on steel billets and bars manufactured by the Donner Steel Co., Buffalo, with the use of imported ferromanganese, ferrosilicon and nickel has been extended to cover production of similar products by the Republic Steel Corp., Youngstown, O., successor to the Donner company.

Drawback allowance has been announced by the department on cast iron pipe, pipe fittings and castings manufactured by the United States Pipe & Foundry Co., Burlington, N. J., with the use of imported pig iron.

# Steady Decline Shown by July Production Figures

FABRICATED steel plate orders in July, according to the department of commerce, were considerably less than in June and the total for seven months lagged behind the same period in 1929. Figures are as follows:

| 1929 | Total | Oil storage tanks | Blast furnaces | Stacks & miscellaneous |
|---|---|---|---|---|
| July | 48,968 | 14,963 | 2,650 | 20,988 |
| (7 mos.) | 333,781 | 91,023 | 8,411 | 141,784 |
| Aug. | 39,702 | 11,150 | 115 | 19,341 |
| Sept. | 41,653 | 15,189 | 200 | 16,123 |
| Oct. | 32,099 | 8,786 | 853 | 15,766 |
| Nov. | 42,295 | 9,033 | 1,019 | 14,601 |
| Dec. | 23,535 | 3,669 | 1,529 | 13,166 |
| Total (year) | 513,065 | 138,850 | 12,127 | 220,781 |
| 1930 | | | | |
| Jan. | 50,076 | 7,432 | 1,042 | 15,168 |
| Feb. | 28,332 | 7,865 | 279 | 11,656 |
| March | 38,051 | 6,593 | 2,749 | 17,675 |
| April | 39,437 | 8,460 | 273 | 17,698 |
| May | 30,306 | 9,222 | 426 | 13,228 |
| June* | 34,073 | 8,841 | 511 | 15,650 |
| July | 30,862 | 10,850 | 102 | 12,587 |
| (7 mos.) | 251,137 | 59,263 | 5,382 | 103,662 |

*Revised.

## Babbitt Declines Sharply

Sales and consumption of babbitt metal in July fell sharply below that of June, according to statistics of the department of commerce. The total for seven months is far below that for the corresponding months in 1929. Comparisons are as follows:

| 1929 | Total apparent consumption | Sold by manufacturers | Consumption by producers |
|---|---|---|---|
| | (Figures given in pounds) | | |
| July.. | 5,360,711 | 4,047,887 | 1,312,824 |
| (7 mos.) | 41,092,883 | 32,666,626 | 8,426,257 |
| Aug... | 5,432,597 | 3,997,427 | 1,435,170 |
| Sept... | 5,225,004 | 3,887,599 | 1,337,405 |
| Oct... | 5,518,851 | 4,007,260 | 1,511,591 |
| Nov... | 4,522,034 | 3,205,689 | 1,316,345 |
| Dec... | 3,343,492 | 2,394,159 | 949,333 |
| Total (year) | 65,134,861 | 50,158,760 | 14,976,101 |
| 1930 | | | |
| Jan... | 4,408,455 | 3,405,041 | 1,003,414 |
| Feb... | 3,426,576 | 2,525,771 | 900,805 |
| March | 5,051,575 | 4,039,395 | 1,012,180 |
| April | 3,868,408 | 2,838,877 | 1,029,531 |
| May | 3,932,501 | 3,225,298 | 707,208 |
| June | 3,702,989 | 2,546,606 | 1,156,383 |
| July | 2,907,977 | 2,405,065 | 502,912 |
| (7 mos.) | 27,298,481 | 20,986,053 | 6,312,428 |

## Steel Barrel Shipments Low

Shipments of steel barrels in July were 441,227, according to the report of the Steel Barrel Manufacturers institute, Cleveland. Production was 35.1 per cent of capacity, compared with 42.8 per cent in June. Shipments in June were 449,137 barrels.

Statistics of the department of commerce show July business by 27 companies was considerably below the figures for June in production, shipments and stocks. Comparisons follow:

| 1929 | Production | Shipments | Unfilled orders within 30 days |
|---|---|---|---|
| July | 790,175 | 782,411 | 377,355 |
| (7 mos.) | 5,041,119 | 5,027,678 | ..... |
| Aug. | 806,574 | 809,860 | 358,150 |
| Sept. | 663,531 | 653,890 | 302,632 |
| Oct. | 629,976 | 638,681 | 298,550 |
| Nov. | 572,621 | 567,257 | 285,295 |
| Dec. | 624,365 | 618,003 | 294,797 |
| Total, (year) | 8,338,266 | 8,315,369 | ..... |
| 1930 | | | |
| Jan. | 650,764 | 643,120 | 304,354 |
| Feb. | 648,709 | 643,324 | 313,349 |
| March | 842,186 | 856,451 | 452,933 |
| April | 769,061 | 766,617 | 322,161 |
| May* | 731,087 | 736,147 | 393,843 |
| June* | 651,559 | 638,358 | 319,754 |
| July | 617,420 | 621,145 | 311,630 |
| (7 mos.) | 4,910,786 | 4,905,162 | ..... |

*Revised.

*PREPARING TO SUPPLY METALLURGICAL PLANT WITH POWER*

*Construction work is now under way on new hydroelectric and steam-electric power plant developments of subsidiary companies of Union Carbide & Carbon Corp., in vicinity of Hawks Nest, Gauley Junction and Boncar, W. Va. The totaled installed capacity of the two plants will be about 200,000 horsepower. Most of the output which is expected to average 120,000 horsepower annually will be used by the proposed plant of the Electric Metallurgical Co., at Boncar. The illustration shows the breaking of ground for the hydroelectric development at Hawk's nest on the New river*

## July Auto Output Shows Low Level in Canada

Production of automobiles in Canada during July totaled 10,188 cars, the lowest number reported for any month of the year to date. This output was 32 per cent under the 15,090 cars produced in June and 42 per cent less than the 17,462 cars made in July of 1929. The output for July as compared with the previous month showed a decrease in all types. Open cars dropped from 1825 to 1609 cars, closed passenger models from 9213 to 6332 cars, trucks from 797 to 394, and chassis from 3228 to 1833. For the seven months ending July the cumulative year's production amounted to 120,873 cars compared with 205,822 cars for the corresponding period of 1929, a decline of 41 per cent.

## Steel, Metals Index Down

Washington—July iron and steel production index number was 93, compared with 110 for June and 152 July last year, taking 1923-1925 as 100, according to the department of commerce. Nonferrous metals, July index was 97, compared with 98 for June and 127 for July last year. Unfilled orders iron and steel July index was 76, compared with 77 for June and 84 for July last year.

## Lamp Post Castings Let

New York—North American Iron Works, Brooklyn, has been awarded a contract for lamp post castings by

the city of New York, including 60 pedestals, 60 columns and 160 mast-arms. City Sales Engineering Co. was awarded 60 pedestals and 60 sleeves. The contracts call for several hundred tons of iron castings. J. E. Coonan, 149 Broadway, New York, has been awarded the contract for 2160 pieces of malleable iron end castings by the department of water supply, gas and electricity. Weinstein Supply Co., New York, has been awarded 20,000 pounds of No. 20 plated tinned mattress wire.

## Steel Corporation Adopts Identification Mark

More than a year ago the United States Steel Corp. appointed a committee of its advertising managers to consider the question of an identification, or trade mark. Trade marks destined to live and become symbols of their possessors must be studied from many angles. Experts were called into consultation, artists and designers were set to work; scores of clever and unique designs were originated. Out of them all came the simple trade mark "U S Steel," lettered as shown in the accompanying illustration. This mark, it has just been decided, will identify practically all printed matter and products of the corporation's subsidiaries.

These points governed in the selection of the mark: Legibility, simplicity, character, longevity, and flexibility. By longevity is meant a design which will not become obsolete in a few years; a trade mark is worth considerable money. By flexibility is meant easy adaptation to any size, for printing, stenciling or stamping.

## World's Organized Workers Decrease 4.3 Per Cent

The total number of organized workers in the various countries of the world is approximately 44,190,525, according to the latest report of tabulations made by the International Federation of Trade Unions. This is a reduction of 1,996,535, or 4.3 per cent from the federation's figures of 1927.

The total number of such workers in North America is reported as 6,947,296. This includes 4,443,523, or about 9 per cent of the working population in the United States. In 1927 the total was 4,241,542. Mexico is credited with having 1,850,000 organized workers, and Canada 300,602.

The total reported for Europe is 35,392,081, Russia leading with 11,060,000; Germany second with 8,694,887; Great Britain third with 4,673,144; Italy 3,000,000; Czechoslovakia 1,738,265, and France 1,200,000. Australia was found to have 1,018,457 organized workers. In Asia there were only 742,194, compared with 3,697,800 reported in 1927. In all Africa the number was 90,497. Haiti was reported as one of the few countries without a trade union movement.

## Employment Increases At General Electric Plant

Employment at the Erie, Pa., plant of the General Electric Co. has been increased to 6000, from 5700 two weeks ago, and preparations are being made for capacity operations during the fourth quarter of the year. Several contracts have been received for electric locomotives. Manufacture of metal boxes for the company's electric refrigerators will be concentrated at this plant.

## Bar Iron Wage Rate Lowest Since 1922

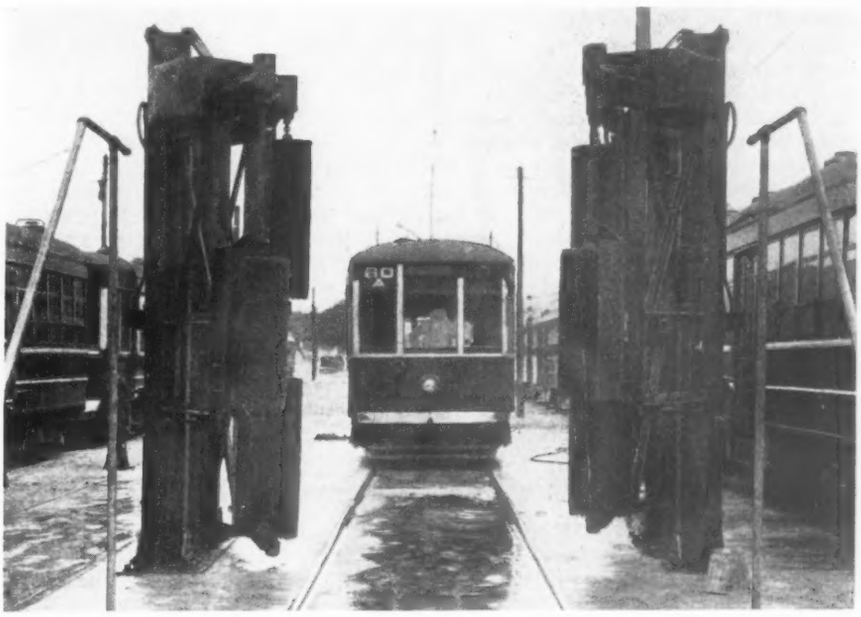
Wage rates in bar iron mills represented in the Western Bar Iron association will be reduced in September and October. The average sales price of bar iron in July and August was 1.80c a pound, compared with 1.90c in the preceding two months. This brings the puddlers' rate down 50 cents a ton from $11.30 to $10.80. The card rate on which all bar iron mill wages are based is the lowest since 1922. Following is a comparison of averages sales prices:

| | 1930 | 1929 | 1928 |
|---|---|---|---|
| Jan. Feb. | 1.95c | 2.00c | 1.85c |
| March-April | 1.90c | 2.00c | 1.90c |
| May-June | 1.90c | 2.00c | 1.90c |
| July-Aug. | 1.80c | 2.00c | 1.95c |
| Sept.-Oct. | ..... | 2.00c | 2.00c |
| Nov.-Dec. | ..... | 2.00c | 2.00c |
| Yearly average | ..... | 2.00c | 1.933c |

## Unemployment Insurance Active Issue in Michigan

Census reports on unemployment so far as compiled show that the highest percentage of those "out of a job, able to work and looking for a job" on April 1 was found in Michigan. The number unemployed was 160,508, or 3.3 per cent of the total population of the state.

The cause was largely due to the slow rate of operations of the automotive industry. Though the labor situation has improved the experence of the past six months has resulted in a widespread campaign for state unemployment insurance, and nearly half of the candidates for election to the legislature are reported to be pledged to such insurance. As this might result in a special tax on manufactured products, or at least tend to increase the general tax rate and promote inequality of the tax burden, employers are opposing the plan.



*BIG JOB NEATLY DONE—WASHING TROLLEY CARS WITH MACHINE*

*The equipment consists of two steel uprights, erected on each side of the track, and to these uprights are attached swinging arms. At the free ends of the arms are attached rotating brushes driven by motors. On the side of the machine from which the car approaches are two vertical standpipes, with holes through which water sprays to drench the car before scrubbing. At the rear end of the machine are two additional spray pipes to rinse the car after it has been scrubbed. The machine was developed by Leeds, Tozzer & Co., New York. Similar equipment is adopted to washing railroad coaches and motor buses*

# Industrial Men in the Day's News

## Ambrose N. Diehl, Vice President, United States Steel Corp.

IDENTIFIED with the steel business since 1899, he has spent the intervening years with one interest—the Carnegie Steel Co.

STARTING in its Duquesne works laboratories, he has advanced steadily until he reached the vice presidency in January, 1925.

NUMEROUS technical papers have been read by him before various organizations and he serves as director of two.

EXPERIENCE in the steel industry of more than 30 years admirably equips Ambrose Nevin Diehl for the more important executive duties he will be called upon to discharge as vice president of the United States Steel Corp., New York. This appointment in succession to I. Lamont Hughes, was noted in last week's issue of STEEL. Since 1925 Mr. Diehl has been vice president of the Carnegie Steel Co., Pittsburgh, important constituent of the Steel Corporation, of which interest Mr. Hughes now becomes president.

Mr. Diehl was born in York county, Pennsylvania, Oct. 20, 1876. His ancestors have resided in eastern Pennsylvania and Delaware for 225 years. He attended public schools and later prepared for college at York Collegiate institute, York, Pa., from which institution he was graduated in 1894. He entered Pennsylvania State college and received a B. S. degree in 1898. After graduation he spent a year in experimental agriculture work in the Pennsylvania experimental station and in 1899 became identified with the Duquesne works laboratories of the Carnegie company.

After seven months he was transferred to the blast furnace department of the same plant and within a half year was made assistant blast furnace superintendent. In October, 1901, he was placed in charge of the department, remaining until 1915 when he was appointed assistant general superintendent of Duquesne steel works and blast furnaces. After a year and a half he became assistant operating vice president in the general offices of the Carnegie company at Pittsburgh, where for 18 months he remained during the period when the stress of the World war brought unusual demands upon the executive department.

In 1918 he returned to Duquesne works as general superintendent and in January, 1925, was elected a vice president of the Carnegie company, returning to the Pittsburgh office. Mr. Diehl has presented a number of technical papers before American Iron and Steel institute, American Institute of Mining and Metallurgical Engineers and the Engineers' Society of Western Pennsylvania and has served as director of the two latter organizations. In addition to memberships in these societies he maintains memberships in American Society of Engineers and numerous clubs. He is president of Duquesne Trust Co., president of Duquesne library and chairman of the Duquesne branch of the Red Cross. He is trustee of Pennsylvania State college and also chairman of the athletic alumni committee.

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H. D. WESTFALL, vice president in charge of sales of Weirton Steel Co., Weirton, W. Va., division of National Steel Corp., has resigned because of ill health. He has been succeeded by James A. Henry, formerly assistant vice president in charge of sales. Mr. Henry has been succeeded by Lee D. Brueckel.

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Carew Sheldon, formerly with the commercial engineering department, Westinghouse Lamp Co., Bloomfield, N. J., now is with the Nesbitt Electric Mfg. Co. Ltd., Toronto, Ont.

□ □ □

James L. O'Neill, formerly associated with Hyatt bearing division, General Motors Corp., now is identified with William H. Jackson Co., Brooklyn, N. Y., as production engineer.

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T. Howe Nimick, assistant general sales manager, Colonial Steel Co., Pittsburgh, has been elected a director, Pennsylvania Trust Co. of Pittsburgh.

□ □ □

G. John Grubb, until recently designing engineer in the centrifugal pump department, Babcock, Wilcox & Goldie McCulloch, Galt, Ont., has become affiliated with Yeoman Bros. Co., Chicago, in a similar capacity.

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James A. Farrell, president, United States Steel Corp., New York, sailed

for Europe Aug. 29, to be gone until Oct. 3. He will visit England, France and Germany.

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T. C. Weiser of Boston has been named superintendent of the Council Bluffs, Iowa, plant of Griffin Wheel Co., Chicago. He succeeds F. J. Head, recently transferred to the St. Paul plant.

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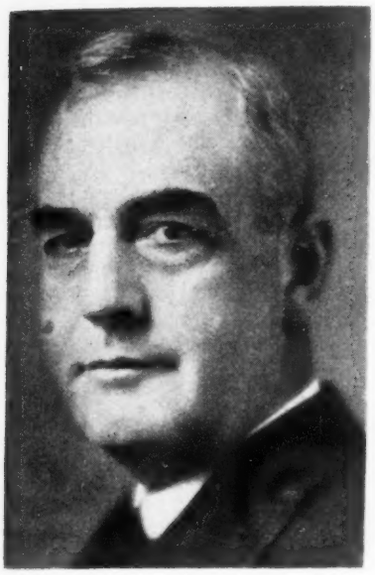
A. W. Remensnyder has resigned effective Sept. 1 as treasurer of Duquesne Steel Foundry Co., Coraopolis, Pa. He will assume the vice presidency of Hankey Baking Co., Pittsburgh. Prior to becoming identified with the Duquesne company he was



**Ralph H. Watson**

**Who was promoted from general superintendent, Homestead works, Carnegie Steel Co., Pittsburgh, to the vice presidency, in succession to Ambrose N. Diehl, as noted in Steel of Aug. 28**

with Republic Chemical Co., Pittsburgh.

J. H. Dittmer, formerly assistant treasurer, Duquesne Steel Foundry Co., has been named treasurer to succeed Mr. Remensnyder.

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J. C. Ten Eyck Jr., has been appointed eastern district sales manager for W. F. & John S. Barnes Co., and John S. Barnes Corp., Rockford, Ill. His headquarters will be 7 East Forty-second street, New York. In February, 1927, Mr. Ten Eyck became district manager, Combustion Engineering Corp., Pittsburgh.

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William A. Dayton, long associated with the Dickerson, Van Dusen & Co., New York, tin plate dealers, has been appointed New England representative of C. S. Davis & Co. Inc., First avenue and Forty-sixth street, Brooklyn, N. Y., dealer in tin plate. His headquarters will be at the company's branch in the Bush terminal, that city.

□ □ □

M. L. Hillmer has resigned as factory manager, Guide Lamp Corp., Anderson, Ind., to become president and general manager of the Saginaw Steering Gear division, General Motors Corp., Saginaw, Mich., and has been succeeded by Frank L. Burke, formerly superintendent at Anderson, to which point the Cleveland plant is being moved.

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A. C. Cook has resigned, effective Sept. 1, as vice president of Warner & Swasey Co., Cleveland, manufacturer of turret lathes, etc. He has been identified with the company for 29 years. At one time he was manager of New York district sales offices and later was general manager of sales. He represented the company in Europe for a number of years.

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Eric Zachau has resigned as western sales manager, Manning, Maxwell & Moore Inc., New York. He has been with the company for 27 years. When he arrived in this country in 1903 he became electrical engineer at Shaw Crane works, Muskegon, Mich., where he remained until 1915, when he was transferred to Pittsburgh as sales engineer. In 1920 he was made chief engineer. He was works manager for seven years and early last year was appointed western sales manager.

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William F. Summers, construction superintendent, H. K. Ferguson Co., Cleveland, for the past year, has been placed in charge of its office, established in Park Square building, Boston, to supervise construction of two buildings in that city involving $30,000,000, general contracts on which recently were awarded to it. Mr. Summers will be contracting engineer for that district. He was graduated from Cornell university in 1914 and has been active in building lines since.

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Thomas Newhall and Joseph Wayne Jr. were elected directors of Baldwin Locomotive Works, Eddystone, Pa., and Philadelphia, to fill vacancies created by resignation of William L. Austin and the decision to make the directorate 16 instead of 15 members. Mr. Newhall is a member of J. P. Morgan & Co. and Drexel & Co. and was elected chairman. Mr. Wayne is president of the Philadelphia National bank. Mr. Newhall also was elected a director of the Midvale Co., Standard Steel Works, and Baldwin Southwark Foundry Co., to succeed Thomas S. Gates who retired to become president of the University of Pennsylvania.

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Ernest Baxter has been elected vice president, railroad division, Sheffield Steel Corp., Kansas City, Mo., and has been placed in charge of its Chicago office just established at 1122 Straus building.

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Don J. Kirk has been transferred from the general sales office, Greer Steel Co., Dover, O., to Detroit, effective Sept. 1 as district representative in charge of its office.

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John S. Oursler has resigned as a vice president of Carnegie Steel Co., Pittsburgh, effective Oct. 1, on account of ill health. He has occupied that position since April 23, 1928 when he was elected to succeed I. Lamont

**John S. Oursler**

Hughes, at which time the latter became a vice president of United States Steel Corp. As noted in last week's issue of STEEL Mr. Hughes has just been made president of the Carnegie company. Mr. Oursler was general superintendent of Homestead steel works at the time of his promotion in 1928, having discharged those duties since the construction of a government ordnance plant on Neville island near Pittsburgh was abandoned at the close of the World war, over which he had had supervision. While at Homestead he successfully carried through a huge reconstruction program over a period of five or more years.

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Joseph Michaels of Hyman Michaels Co., Chicago, scrap iron and steel, has been appointed to represent the Institute of Scrap Iron and Steel Inc., as national councillor in the chamber of commerce of the United States.

Benjamin Schwartz, director general of the Institute, has been designated as a delegate to the United States chamber of commerce, which through its department of natural resources is studying scrap problems.

# Industrial Machinery Exports Decline Sharply in July

EXPORTS of industrial machinery from the United States in July showed a loss of $5,000,000, as compared with July of last year. Trade for the first six months of 1930 had shown an increase of more than $6,000,000 over the corresponding 1929 period.

Despite July's slump this trade for the seven months this year was the largest in nine years and now stands slightly in excess of the trade of the 1929 period.

July's slump should not be given undue importance as the trade in industrial machinery shipments to foreign countries is subject to sharp fluctuations from month to month. The substantial decline for this brief period radically reduces the large gain which had been made during the first six months of the year. Exports for the seven months are $1,350,000 ahead of last year. This record is in contrast with the decline of 22.5 per cent in total exports from the United States for the same time.

Sharpest declines in July were centered in the drop among mining, well and refinery machinery. Exports of this classification were nearly 43 per cent below those of July of 1929. Foreign shipments of well-drilling machinery showed a slight increase but refinery equipment was in a fall in value from $1,312,000 to $692,000. Owing to the unusually brisk trade of the first half year exports of well and refinery machinery are still nearly 15 per cent above those of last year.

Power-driven metalworking machines during July were shipped abroad only at a slightly reduced rate from that for July of 1929. Shipments of other metalworking machinery showed a substantial loss for the month, resulting in a decline of nearly 5 per cent for the group.

Both construction and conveying machinery exports were well above the level of the first seven months of last year, in spite of slight losses during July. Excavators, power shovels and parts made gains over the unusually large trade of 1929. Dredging machinery nearly doubled its record for the first seven months of 1929 and road machine makers showed a material increase.

Our exports of textile machinery, falling off 46 per cent for the month and nearly 34 per cent for the seven-month period, reflect the depressed condition of the world's textile industry.

*COMPLETE CABLES FOR HUDSON RIVER BRIDGE*

*Port officials of Fort Lee, N. J., on the Hudson river recently celebrated the completion of cable for the bridge connecting Fort Lee with Fort Washington, N. Y. The bridge will be suspended by means of four cables each 36 inches in diameter, the weight of the cable wire being 28,450 tons. The diameter of the wire is 0.195-inch and each cable has 26,474 strands of wire. The length of the bridge and approaches is to be 8800 feet*

# Obituaries

FRANK L. DRIVER, 60, chairman of the board and one of the founders of the Driver-Harris Co., Harrison, N. J., manufacturer of special heat resisting alloys and castings, died at Zoute Sur Mer, a resort in Belgium, Aug. 26. Mr. Driver has been in poor health for some time and for the past three years had made his residence in Brussels, Belgium. He was born in Brooklyn, N. Y., July 4, 1870. Prior to the organization of the Driver-Harris Co. in 1899, he had been affiliated with John A. Roebling's Sons Co., Trenton. His son, Frank L. Driver Jr., is president of the Driver-Harris Co.

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J. V. Stewart, manager, Columbiana Pump Co., Columbiana, O., died Aug. 14.

□ □ □

William Gutenkunst, 80, founder and president, Milwaukee Hay Tool Co., and president, Milwaukee Malleable & Gray Iron Foundry Co., Milwaukee, died there Aug. 23. He was born in Milwaukee July 7, 1850. Mr. Gutenkunst was the inventor and designer of numerous items of farm machinery. He was a director of Wisconsin State bank, Milwaukee.

Detroit, Toledo & Ironton railroad has asked permission to abandon nine miles of road between Fort William and Kingman, O.

# Here and There in Industry

FORT Pitt Bridge Works, Pittsburgh, and the Massillon Bridge & Structural Co., Massillon, O., are expected to announce their merger shortly. A new Pennsylvania corporation, the Fort Pitt Bridge Works, has been formed to take over these two companies. No public financing will be done, and stocks and bonds of the companies will be exchanged for securities of the new organization. Officials of the Fort Pitt Bridge Works are expected to be leading executives of the new company.

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Quigley Furnace Specialties Co., 56 West Forty-fifth street, New York, has changed its name to Quigley Co. Inc.

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Link-Belt Co., Chicago, has moved into its new plant and office at Paul avenue near Bayshore highway, San Francisco.

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Alfred Fisher Furnaces Inc., 762 West Adams street, Chicago, has moved its plant to 1235 South Fifty-second street, Cicero, Ill., where larger facilities are available.

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Charles C. Burstein Co. has established offices at 1507 Clark building, Pittsburgh, for the sale of steel and iron scrap. Mr. Burstein formerly was associated with the Erie Iron & Steel Co., Erie, Pa.

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Hubbard Engineering Co., Middletown, Conn., builder of marine engines, has purchased the car barns of the Berkshire Street Railway Co. at Great Barrington, Mass., and will remodel them for manufacturing.

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Dominion Bridge Co., Montreal, has been awarded a contract by the Pacific Great Eastern railways for fabricated steel for the superstructure of a bridge over the Fraser river, B. C., at an estimated cost of $200,000.

□ □ □

T. E. Rousseau Co., and the Eastern Canada Steel Works have been awarded the contract by the city of Quebec for the steelwork on the new bridge over the St. Charles river, for which $400,000 has been authorized.

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Carnegie Steel Co., Pittsburgh, has contracted with the Koppers Rheolaveur Co., Pittsburgh, for a coal washing plant at its by-product coke plant at Clairton, Pa. It will have capacity of 12,000 tons per day and will cost about $2,000,000. The installation will include three steel bins of 1000 tons capacity, conveying equipment and dryers. It will greatly reduce the proportion of foreign material in the coal and of ash and sulphur in the coke.

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Murray Iron Works Co., Burlington, Iowa, manufacturer of steam turbines, engines and boilers, has appointed William Stairs, Son & Morrow Ltd., Halifax, Nova Scotia, and Mathews & Co., Orlando, Fla., its representatives in those districts.

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Foster Wheeler Corp., New York, has opened a branch office at 712 Thompson building, Tulsa, Okla., in charge of C. C. Steward. The new office is to afford better service to power stations, oil refineries and natural gas absorption plants.

□ □ □

Better Products Machine Corp., Lynchburg, Va., formed recently for the manufacture of mechanical devices, is having its machinery built on contract. J. B. Winfree Jr. is president, R. N. Winfree vice president and treasurer and A. B. Chewning secretary.

□ □ □

St. John X-ray Service Corp., New York, has installed a unique plant at the Barberton, O., works of the Babcock & Wilcox Co. The photographic department will be used primarily for routine inspection of welded seams in pressure vessels, heat exchangers and similar equipment.

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Wisconsin Axle Co., Oshkosh, Wis., a subsidiary of the Timken interests, has announced plans for immediate construction of a 1-story machine shop addition, 100 x 150 feet, to be ready about Oct. 15. The Ben B. Ganther Co., Oshkosh has taken the general contract.

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Texas-Empire Pipe Line Co., Tulsa, Okla., announces addition of eight new pumping stations on its Oklahoma-Chicago line, to be located at Sand Springs, Okla., Chetopa, Kans., Cole Camp, Mexico, and Sheldon, Mo., and Bayless, Fairbury and Broadwell, Ill. Equipment for six stations including 18 units 4-stage centrifugal pumps has been let to Worthington Pump & Machinery Corp., New York. One station will be diesel engine equipped and another will have pumps of reciprocating type. Electric motors to drive the pumps have been let to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., which will furnish 12 units, 800-horsepower synchronous type and two units 450 horsepower similar type.

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Granite City Steel Co., Granite City, Ill., has appointed Ambler & Garnjost, San Francisco and Los Angeles, its district sales agents for the Pacific Coast. A. B. Ambler, 444 Market street, San Francisco, is senior partner in the firm. A. E. Garnjost, San Fernando building, Los Angeles, is junior partner and has been located in Los Angeles for six years.

□ □ □

Boiler and Engineering Co., Newark, N. J., manufacturer of baffles for steam boilers, has become affiliated with the Plibrico Jointless Firebrick Co., Chicago, manufacturer of furnace linings. Products of the former company will be marketed by the sales organization of the latter and Plibrico refractories will be used in the baffles. Boiler Engineering Co. will continue its headquarters at Newark and offices of the Plibrico company will remain at Chicago.

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National Brake & Electric Co., Milwaukee, a division of the Westinghouse Electric & Mfg. Co., manufacturing air compressors, hydraulic presses, farm water systems, car washing outfits, gasoline switching locomotives, is engaging in the manufacture of a 40 horsepower farm tractor of the crawler type. It is designed for logging and construction work as well as farm service.

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Cutler-Hammer Inc., Milwaukee, has taken over the Reynolite line of bakelite electric products of the Reynolds Spring Co., Jackson, Mich. The Reynolds company will continue to manufacture automobile springs and other original lines. Earlier this year, Cutler-Hammer, Inc., took over the Union Electric Mfg. Co., Milwaukee, maker of drum controls, and the Schweitzer & Conrad Co., Chicago, maker of high voltage controls. Last year the Trumbull Vander Pool Electric Mfg. Co., Bantam, Conn., was acquired by Cutler-Hammer.

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Perfex Corp., 335 Oklahoma Avenue, Milwaukee, maker of radiators for automobiles, trucks, tractors and industrial gas engines, is establishing a department for the production of unit heaters for industrial plants and garages. The line has been perfected after three years of engineering research. T. C. Cornell, who for many years has been connected with air-conditioning engineering work, has been engaged to direct the new heating division. D. T. McLeod is president and general manager of the Perfex Corp.

# EDITORIAL

## U. S. Should Stop Gambling in Inflammable Material

LAST Saturday a fire of unknown origin destroyed part of the building in which the offices of the Federal Trade commission are housed. In commenting on this disaster, many observers will lay emphasis on the fact this is the third serious conflagration in federal buildings at Washington during the past eight months. Others, including those identified with the steel industry, probably will find significance in the following excerpts from the press dispatches appearing in the Sunday newspapers:

"Many records running all the way back to the bureau of corporations, established in 1904, which was replaced by the trade commission in 1914, went up in smoke in their *cheap wooden file cases.*

"Most of the records of investigations were kept in *wooden filing cases or desks* and it was apparent that most of these in the center of the building were destroyed.

"A temporary structure of stucco and wood built speedily during the World war, the building was two stories high and covered a square block."

Later reports appearing in the Monday papers stated that workers checking the extent of the damage found that "most of the records were intact, though waterlogged and smoked." Physical loss was estimated at $150,000.

### An Object Lesson To Public Officials

We hope that this fire will help to direct attention to the general apathy of federal, state and local authorities to the subject of fire prevention. The public has a right to expect its official representatives to insist on fireproof construction. Yet among the buildings of the United States government, the 48 states, the 2000 odd counties and several thousand larger cities are to be found numerous potential firetraps.

Many of these are structures erected years ago before modern fire-safe construction methods were developed. A few, like the building that was gutted Saturday, were hastily thrown together for temporary use. It will be years before these out-of-date and inadequate buildings will be replaced by modern structures. In the meantime, every precaution should be taken to guard them against fire, and one of the first steps is to reduce the hazard by restricting the amount of inflammable material in these buildings.

Many government buildings, state houses, county court houses, city halls, post offices, etc., are in effect office buildings in which letter files, record books, maps and card indices constitute the principal contents. If this volume of paper is stored in wooden desks, drawers, shelves and cases, it presents a serious fire risk in itself. The same material enclosed in modern steel desks, file cases and cabinets presents practically no fire hazard, and in case the building burns, the steel equipment offers considerable protection to its contents against fire, smoke and water.

### Merits of Steel Are Recognized, But—

No public official can be ignorant of the advantages of fireproof building construction or of the merits of steel filing equipment. Yet what do we see? Even a superficial examination will reveal evidences of inattention to duty by authorities who certainly should know the risks they are taking. For instance, we find:

1. Thousands of public buildings of inflammable construction in which the fire hazard is actually increased by failure to store inflammable contents in fireproof receptacles.

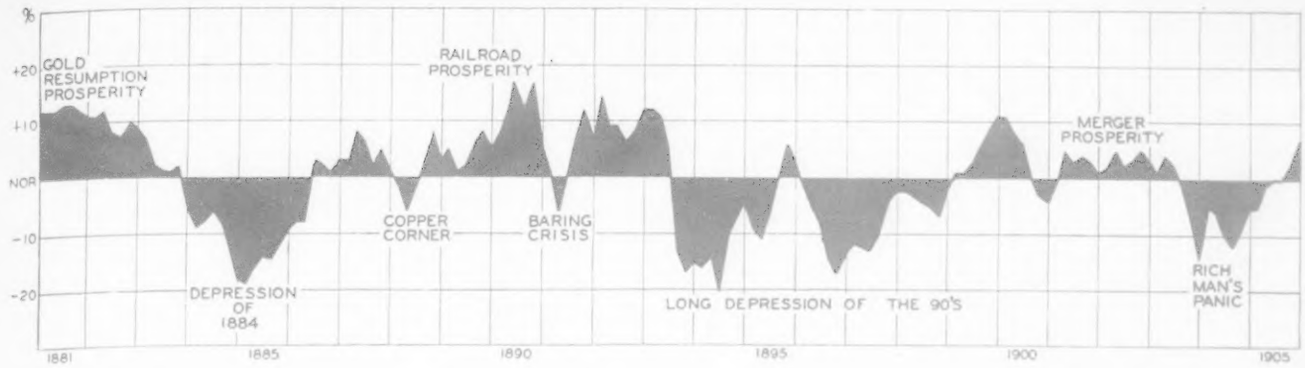
2. Numerous instances where records of priceless historical value and unreplacable works of art are inexcusably subjected to unnecessary risks from damage by fire.

3. Indifference of public officials to specifications calling for fireproof construction when new buildings are being planned.

4. Carelessness in the inspection and maintenance of public buildings. Poor wiring has caused numerous serious fires in government-owned structures. Periodic inspection and proper attention to repairs would have prevented many of these fires caused by defective or obsolete wiring.

5. General ignorance or negligence as to the risk involved in the contents of a building. Presence of great quantities of paper in a strictly fireproof building is not dangerous, but in an old, inflammable building it cannot help but invite catastrophe.

The fire loss in the United States is about half a billion dollars a year or roughly $4 per capita. If public authorities would set a good example by insisting on fireproof construction and inflammable office and filing equipment, this annual gambling loss yielded to the demon fire would be reduced considerably.




# Fifteen Cycles of Prosperity and Depression Mark Fifty Years of American Business

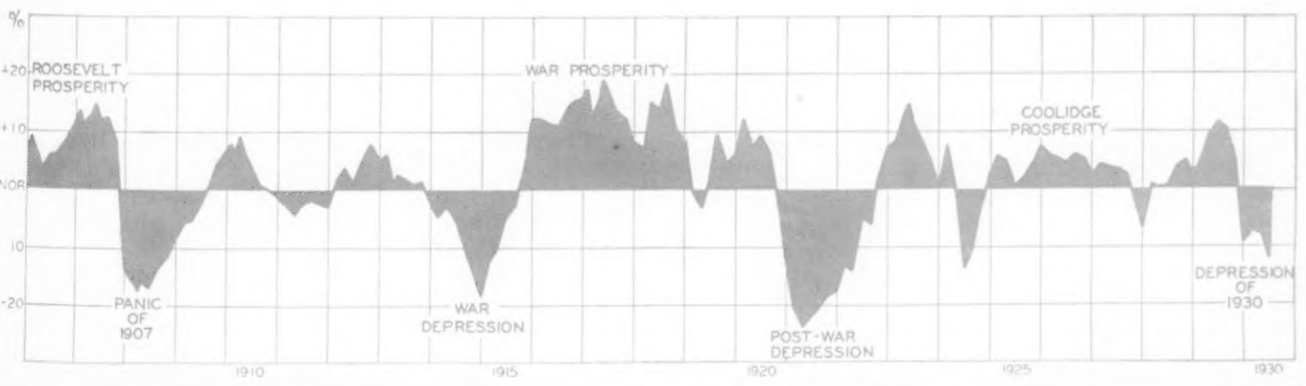
OF THE various statements pertaining to business conditions issued during the past few weeks, none has been received with greater attention than those credited to Col. Leonard P. Ayres, vice president, Cleveland Trust Co., Cleveland. Col. Ayres has been quoted in numerous publications but perhaps the most interesting discussion presented under his name appeared in the August issue of *The Clevelander,* published by the Cleveland Chamber of Commerce.

In that periodical Col. Ayres presented a chart, which is reproduced on this page, showing a panorama of business cycles during the past half century. Commenting on this chart, Col. Ayres says:

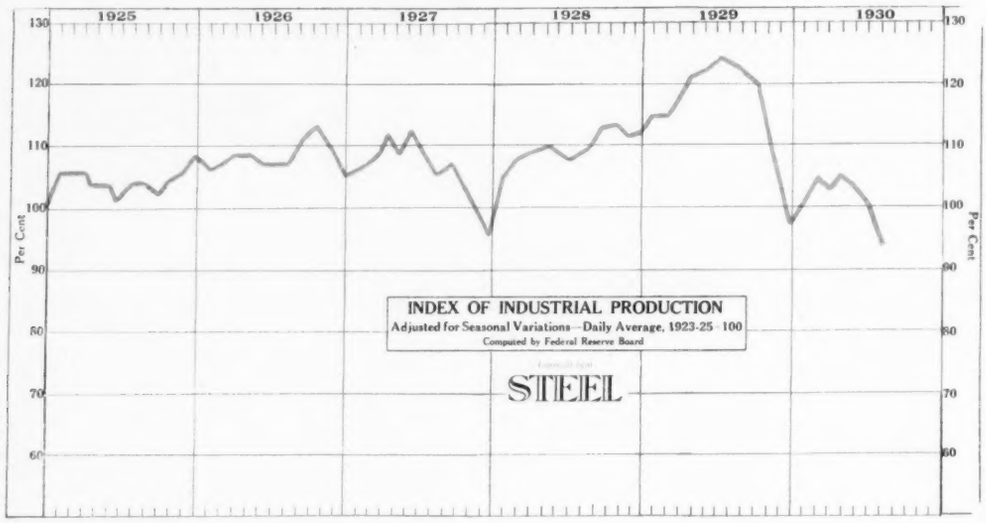
"In the past half century we have had in this country 15 periods of business prosperity and 15 depressions, including the present one. Since we have had in these 50 years 15 of these complete business cycles from prosperity to depression and back again, it is a matter of simple mental arithmetic to realize that the average duration of the cycles has been three and one-third years.

"Each business swing or business cycle tends to have four rather definite phases. It starts in a period of prosperity, such as that which we were enjoying a year ago. That prosperity after a time begins to fade and it turns down into a decline. The decline continues with an accelerated shrinking of business activity until it finally reaches the low stage of depression. Depression prevails for a longer or shorter period until recovery sets in, and recovery continues until business activity is back up to full prosperity once more. Thus we have four rather definitely marked out phases of the business cycle which are prosperity, decline, depression, and recovery.

"These phases of the business cycle are almost regularly accompanied by certain types of changing business sentiment and public psychology. When business is good and we are in a period of prosperity, the dominant sentiment is one of confidence, which continues until competition begins to impair progress. Then at that full flood of production and prosperity, confidence begins to give way to doubt and doubt accompanies decline. Decline and doubt continue until business gets down to depression levels as it is today, and then suddenly doubt changes to fear. Fear always and everywhere changes to hope. Prosperity is accompanied by confidence, decline by doubt, depression finally by actual fear and recovery by hope. These changes have been going on over and over again through their complete cycle on the average of once every three and one-third years during the past half century in this country."



# THE BUSINESS TREND




| 1930 | |
|---|---|
| July | 95 |
| June | 100 |
| May | 104 |
| Apr. | 106 |
| Mar. | 104 |
| Feb. | 107 |

| 1929 | |
|---|---|
| July | 124 |
| June | 127 |
| May | 124 |
| Apr. | 122 |
| Mar. | 118 |
| Feb. | 117 |

## Signs of Business Upturn Are More Definite

NOW that September is here and the two traditionally dull months—July and August—are in the background, leaders of American business are looking for more tangible evidence of improvement. Unfortunately, the statistics of business for August, when they appear shortly, will not reveal any marked changes from July figures. The best that can be expected are slight gains in certain phases of industrial activity.

Weekly indications show that small inconsequential signs of improvement were recorded late in August. Car loadings turned upward slightly, but even this is somewhat negative evidence because the normal seasonal trend at this time of the year is moderately upward. Activity in the steel industry has been increasing gradually to a point of about 58 per cent of capacity for the entire industry.

### Gain of Industrial Activity in August Probably Slight

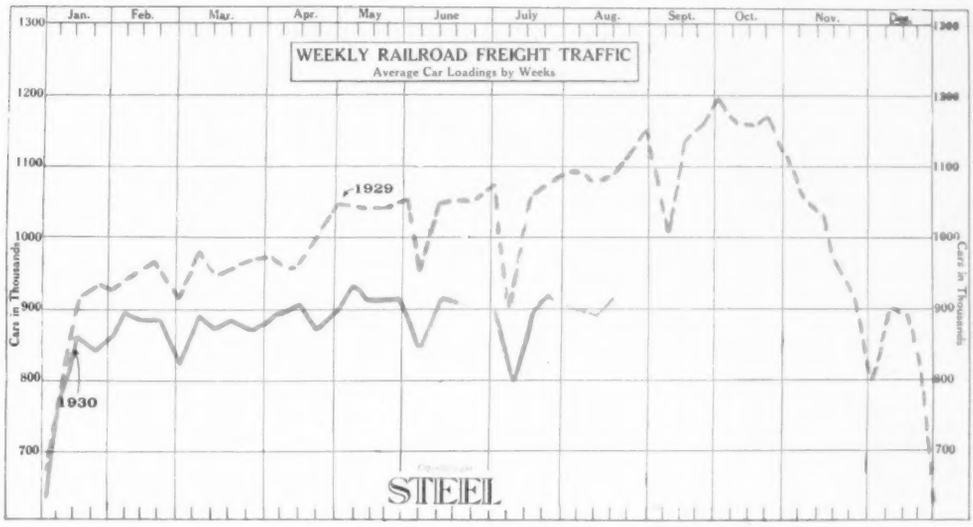
In an ordinary year, industrial activity may be expected to increase rather noticeably in September. The index of industrial production compiled by the Federal Reserve Board, which stood at 100 in June, dropped to 95 in July. This compares with 124 for July, 1929. Industry resumed work in a small way early in August, suffered a relapse in the second week, and then slightly more than recovered its losses in the succeeding weeks of the month. It will be interesting to see if the recent recovery will be sufficient to pull the index for the month above the July figure.

As hinted in this column last week, the price situation seems due for significant developments. Last week bars, plates, shapes and to some extent sheets registered marked signs of weakness, causing steel's composite to drop to $32.88, after remaining at $33.00 for two weeks. However, since the time this weakness developed, evidence has been accumulating to show that a stiffening of prices may be expected soon.

### Prices Still Lower, But Turning Point Seems Near

A number of indices of commodity prices already have turned upward, lending strength to the belief that the turning point for the majority of commodities is near. Current cases of price weakness, as in steel products, should not be taken too seriously. The history of sustained periods of price declines shows that invariably a time comes when a further decrease in prices becomes ineffectual. We are near that situation at present. Reductions in automobile prices have failed to stimulate purchases. Likewise, it is believed that lower prices of many materials would fail to bring forth any material increase in purchases.

Practically the same idea holds true in credit. Credit conditions continue easy, but the demand for funds for commercial uses has not been stimulated by the availability of easy money. In fact further reductions in money rates have occurred, without marked effect on borrowings. Rates on prime commercial paper vary from 3½ to 6 per cent in the metropolitan banks. This compares with 5½ to 6 per cent, the rates prevailing at this time last year.




| 1930 | |
|---|---|
| August 16 | 922,823 |
| August 9 | 904,157 |
| August 2 | 918,335 |
| July 26 | 919,349 |
| July 19 | 928,256 |
| July 12 | 915,985 |

| 1929 | |
|---|---|
| August 16 | 1,102,567 |
| August 9 | 1,092,153 |
| August 2 | 1,105,920 |
| July 26 | 1,102,553 |
| July 19 | 1,079,968 |
| July 12 | 1,066,414 |

## Freight Car Loadings Increase; Improvement Is Slight

Freight car loadings for the week ending August 16 showed a small rise to 922,823 cars, the first improvement since the middle of July. The rise was an increase of 18,666 cars over the preceding week but a reduction of 179,744 cars or 16 per cent below the corresponding week of 1929. The present level of car loadings also represents a reduction of 135,086 cars or 13 per cent from the same week of 1928. To date loadings have failed to show any substantial seasonal improvement largely because of dullness caused by summer factory shutdowns and extended vacation closings. Now that these are mostly over and operations are starting again and crops are beginning to be marketed more seasonal improvement may be looked for during the coming weeks.

## Coke Production in July Touched Lowest Point of Year

Total coke production during July continued the downward trend started in 1929. For the month output declined to a new low for the year. By-product coke dropped to 3,770,426 tons from 3,953,846 tons in June and from 4,613,723 tons in July, 1929. The July figure is at the lowest level since February, 1928, a decline of 5 per cent from the previous month and 18 per cent from the corresponding month of last year. Beehive coke also dropped during July but at a somewhat faster rate. Output fell from 261,600 tons in June to 214,600 tons in July, which is a drop of 18 per cent from June and 64 per cent from the 600,200 tons of July, 1929. The daily average of by-product and beehive coke stands at 121,627 and 8,254 tons respectively.

| By-Product | Tons |
|---|---|
| July, 1930 | 3,770,426 |
| June, 1930 | 3,953,846 |
| July, 1929 | 4,613,723 |

| Beehive | |
|---|---|
| July, 1930 | 214,600 |
| June, 1930 | 261,600 |
| July, 1929 | 600,200 |

STRUCTURAL STEEL CREATED THE SKYSCRAPER

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"APARTMENT HOUSES OF THE FUTURE." IN THIS IMAGINATIVE DESIGN BY HUGH FERRISS A PROMENADE BRIDGES VEHICULAR TRAFFIC. AN ENLARGEMENT, ON SPECIAL STOCK FOR FRAMING, WILL BE MAILED WITHOUT CHARGE TO ANY ARCHITECT, ENGINEER OR BUSINESS EXECUTIVE.

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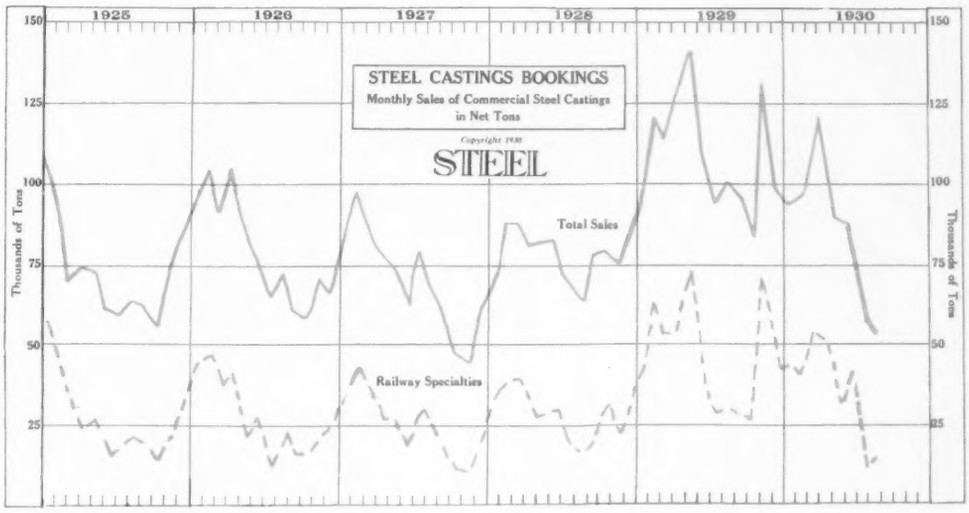
Before building anything, find out what steel can do for you. The Institute serves as a clearing house for technical and economic information on structural steel, and offers full and free co-operation in the use of such data to architects, engineers and all others interested.

The co-operative non-profit service organization of the structural steel industry of North America. Through its extensive test and research program, the Institute aims to establish the full facts regarding steel in relation to every type of construction. The Institute's many publications, covering every phase of steel construction, are available on request. Please address all inquiries to 200 Madison Avenue, New York City. Canadian address: 710 Bank of Hamilton Bldg., Toronto, Ontario. District offices in New York, Worcester, Philadelphia, Birmingham, Cleveland, Chicago, Milwaukee, St. Louis, Topeka, Dallas, San Francisco and Toronto.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION INC. AISC FOUNDED 1921

## AMERICAN INSTITUTE OF STEEL CONSTRUCTION

STEEL INSURES STRENGTH AND SECURITY




**Total New Bookings**

| | Tons |
|---|---|
| July, 1930 | 57,923 |
| June, 1930 | 61,358 |
| July, 1929 | 103,356 |

**Railway Specialties**

| | |
|---|---|
| July, 1930 | 14,708 |
| June, 1930 | 13,714 |
| July, 1929 | 37,731 |

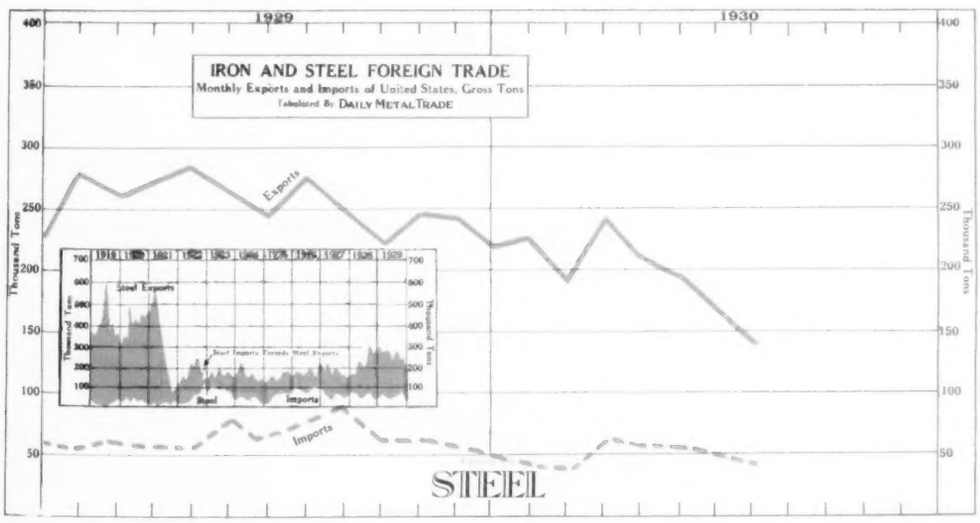
## New Orders for Steel Castings Register Further Declines in July

New orders for steel castings in July, as reported to the department of commerce by the principal manufacturers, continued the downward trend by falling 6 per cent from the June low level. This drop indicates a slowing up of the decline as June registered a falling off of approximately 33 per cent. For July new orders booked totaled 57,923 tons compared with 103,356 tons in July, 1929 and 66,992 tons in July, 1928, which represent respective declines of 44 and 14 per cent.

Railroad specialties, on the other hand, during July showed an increase of 7 per cent to 14,708 tons compared to 37,731 tons during July, 1929 and 20,483 tons for the corresponding period of 1928.

## Exports of Iron and Steel Sink To 1925 Level

Foreign trade of iron and steel in July continued to decline to new low levels. For the month exports declined 17 per cent to the lowest level since 1925, while imports fell 19 per cent to return to 1924 figures. This makes the fourth consecutive drop for exports and brings the total for July to 131,772 tons, which contrasts with 159,392 tons in June and 270,532 tons in July, 1929. Imports, however, have registered only two consecutive declines from May, bringing the total to 39,700 tons in June. The reason for these sharp declines in iron and steel foreign trade does not focus to one definite cause. Rather it appears to be the result of a world wide recession together with some few tariff complications.

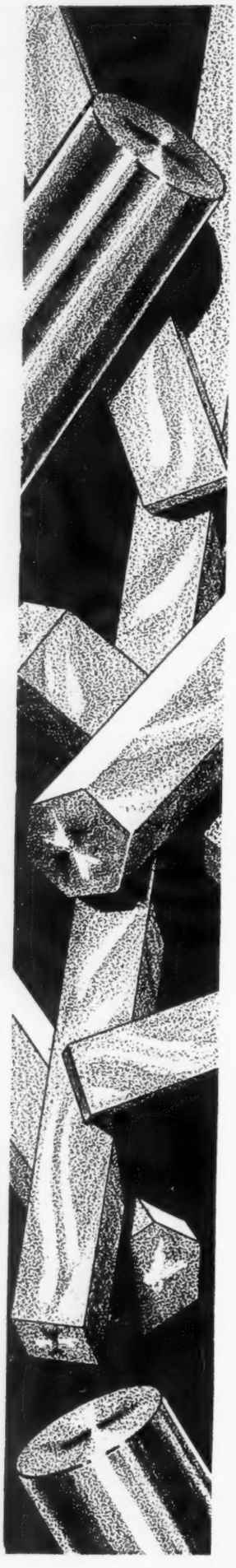



**Exports**

| | Tons |
|---|---|
| July, 1930 | 131,772 |
| June, 1930 | 159,392 |
| July, 1929 | 270,532 |

**Imports**

| | |
|---|---|
| July, 1930 | 39,700 |
| June, 1930 | 48,955 |
| July, 1929 | 71,378 |



**This is Number Two of a Series of Advertisements**

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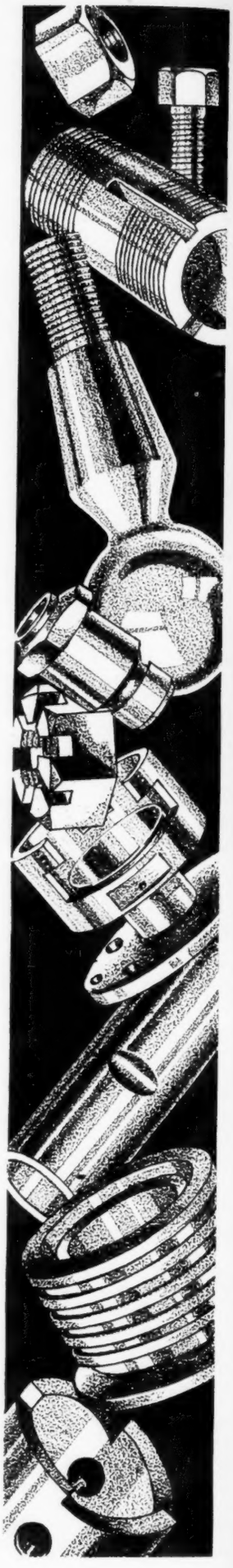
*"The Rapid Duplication of Machined Steel Parts at Lowest Cost Continues to Depend Upon That Perfection and Precision Which Only the Cold Finishing Processes Can Give"*

## THE COLD FINISHED STEEL BAR INDUSTRY

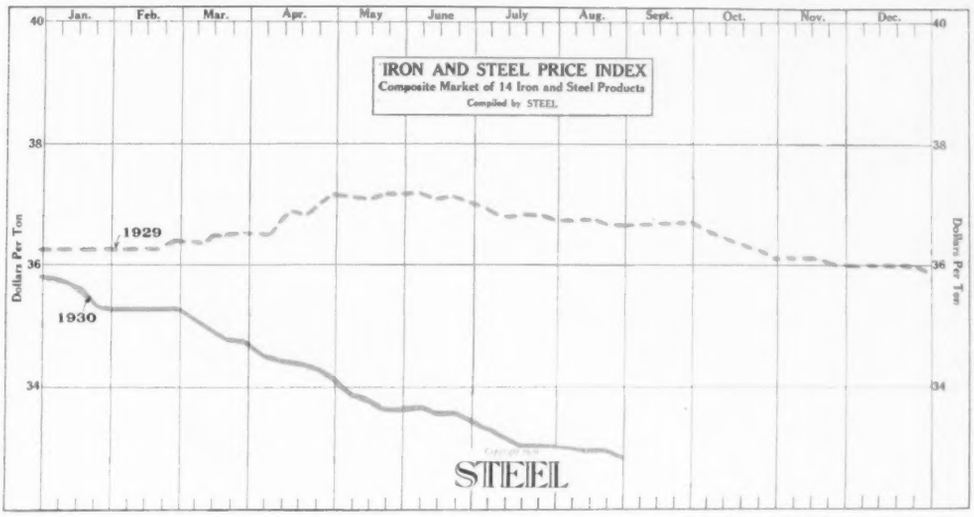


**Weekly Figures**

| | |
|---|---|
| August 27 | $32.88 |
| August 20 | 33.00 |
| August 13 | 33.00 |
| August 6 | 33.08 |

**Monthly Averages**

| | |
|---|---|
| August, 1930 | $32.99 |
| July, 1930 | 33.21 |
| June, 1930 | 33.53 |
| August, 1929 | 36.54 |



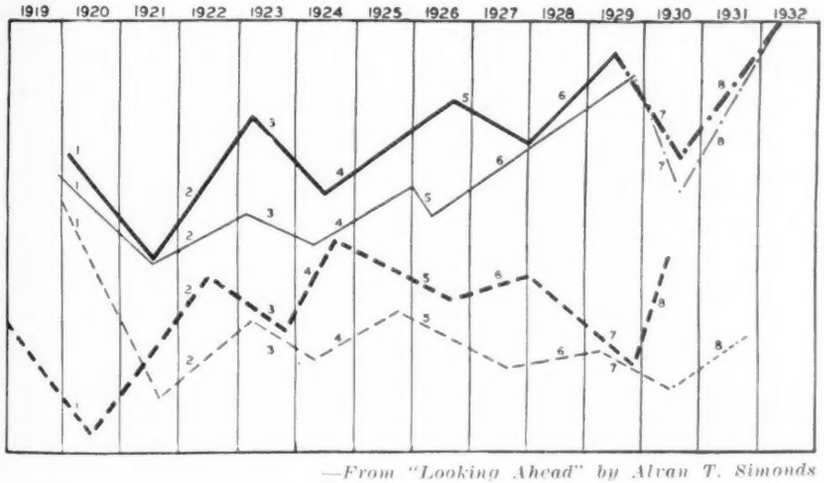

## Composite of Iron and Steel Prices Drops to $32.88

STEEL's composite price of 14 iron and steel products declined 12 cents for the week ending August 27 after holding at $33 for two weeks. This weakness was caused by reduction on plates, shapes and galvanized sheets. In spite of this softness in price structures the outlook for the steel industry is more encouraging. Steel consumers are inquiring from producers for tonnages for future delivery. Producers, on the other hand, are slow to make commitments. One has gone so far as to announce that advances in prices will be made September 15 on bars, shapes and plates.

The monthly average composite price declined approximately 1 per cent in July to $32.99 and compares with $36.54 in July, 1929.

## Forecast Shows Upward Swing of Industrial Production, Prices

In "Looking Ahead," Alvan T. Simonds, president, Simonds Saw & Steel Co., carries forward his long-time forecast of business conditions. Study of the chart and key at the bottom of the page shows that according to Mr. Simonds' prediction, industrial production, wholesale commodity prices and stock prices all swing upward from a low point or turning point which appears to have been reached in July or August. The forecast is based on the actual trend of the heavy dashed line, representing commercial paper rates reversed (volume of loanable funds). The forecast lines are approximate in that they indicate only direction and duration of trend. The long-time forecast should always be checked against current data.




*—From "Looking Ahead" by Alvan T. Simonds*

Heavy dotted line is commercial paper rates, New York, reversed, showing swings in credit supply. Heavy solid line is volume of industrial production, Federal Reserve bulletin. Light dotted line is wholesale commodity prices, Guaranty survey. Light solid line is industrial stock prices, *The Annalist*. Estimated movements are indicated by breaking the lines with dots and are numbered 8. The forecasting line, money rates reversed, forecasts only direction of trend an approximate length of other lines. Lines are comparable only for direction and duration of trend. They represent the short cyclical swings by straight lines connecting cyclical peaks and cyclical low points. Minor fluctuations are omitted.

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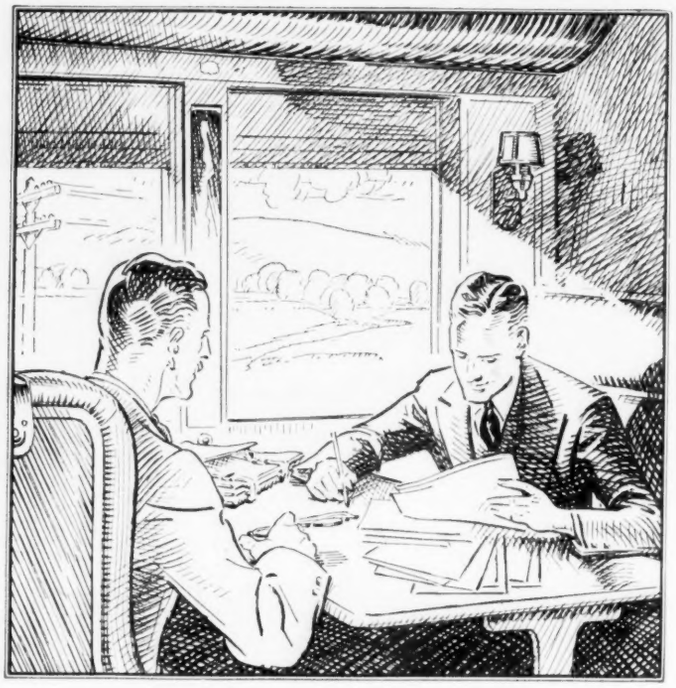
## *the worth of business papers*



"LAST year I got a healthy tan digging divots. This year I've acquired a Pullman pallor digging for business. And let me tell you: this year I realize the dollars-and-cents value of my business papers."

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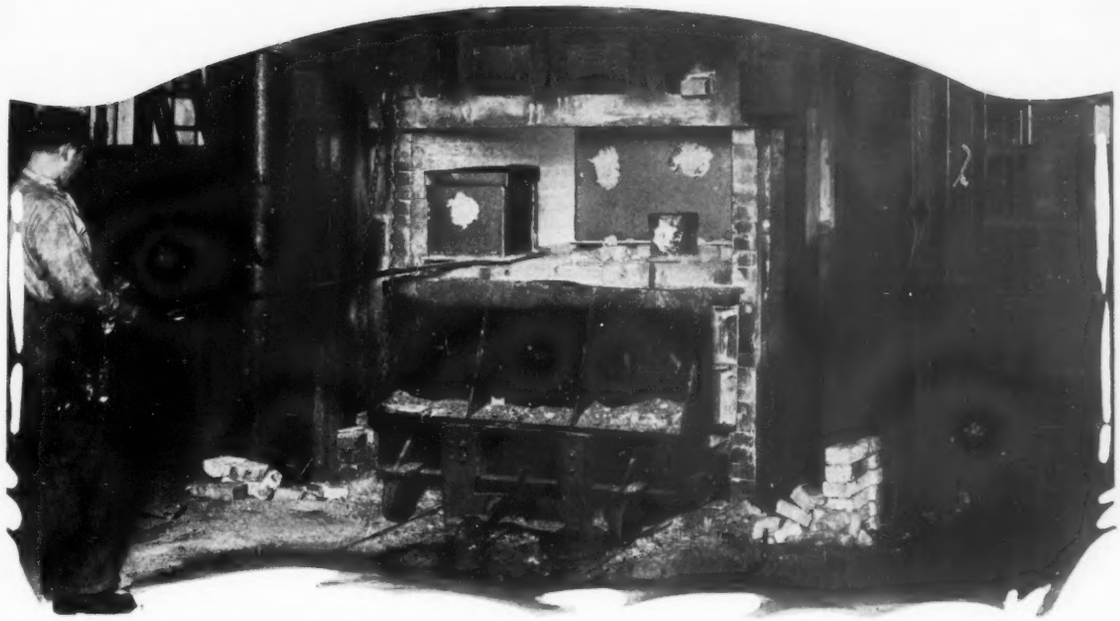


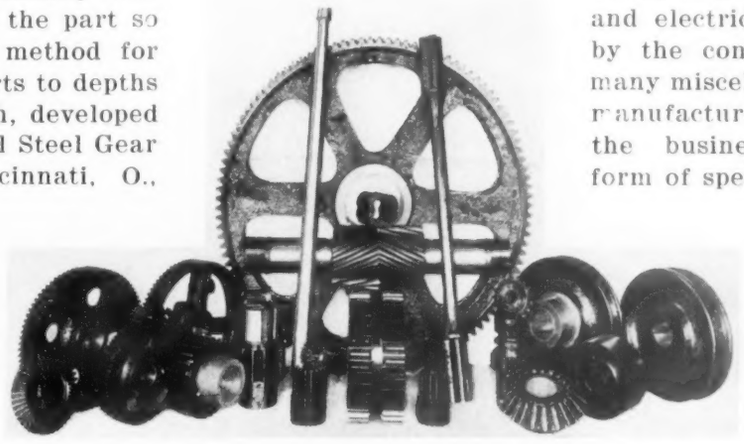
*Car-bottom furnace fired with gas. The car platform is built of rails and alloy steel tubes*

# Case-Hardened Steel Parts Resist Severe Wear and Shock

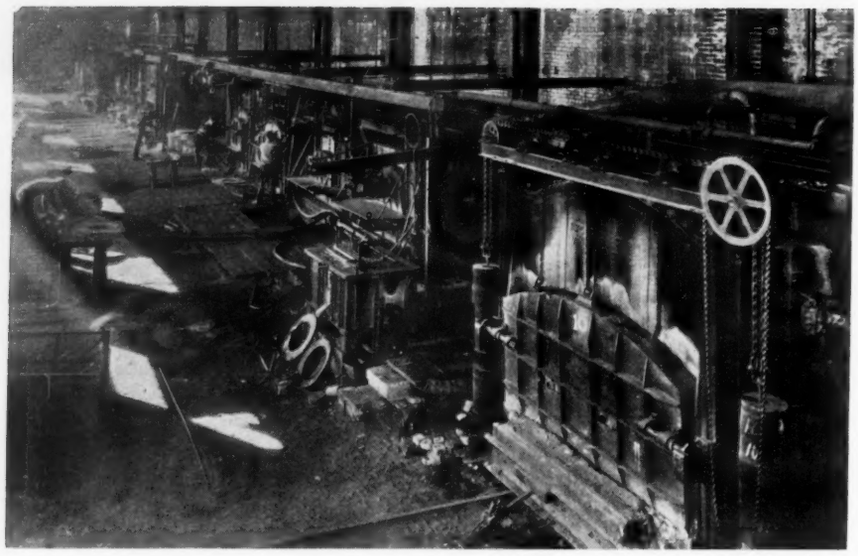
BY J. B. NEALEY

CARBURIZATION when followed by heat treatment, imparts to steel the dual characteristics of a hard, wear-resisting surface and a tough, shock-resisting core. The life of a gear, cam or roll, usually is in direct proportion to the depth of case, other things being equal. Hence, any method that will produce an increase in the depth of the hardened area usually will lengthen the life of the part so treated. A special method for carburizing steel parts to depths from 3/16 to ¼-inch, developed and used by the Tool Steel Gear & Pinion Co., Cincinnati, O., eliminates many of the defects of the usual process. A special carburizing compound, developed in the laboratories of this concern, is used and a uniform hardness is obtained throughout the depth of the case instead of the usual progressive taper from high to low carbon. In this way the wearing qualities are maintained until the total depth of case has been worn off.

Hardened gears and pinions up to 80 inches diameter, weighing up to 3000 pounds and intended for severe duty in steel mills, coal mines, cement mills, and electric railways are made by the company. In addition, many miscellaneous products are manufactured, a large portion of the business coming in the form of special jobs from plants in which new cranes, mills, mining locomotives, etc., are designed and involve specially carburized rolls, gears, brake drums, etc. These parts may be spe-



*Some of the work produced including crane wheels, pinions, rolls, herringbone gears, etc.*



*Heat treating division showing battery of furnaces for heating the work*

cified either by the maker or the buyer. Leveler rolls for sheet mills made by this firm are in continual use up to five years without any dressing and grinding. Crane track wheels are made with hardened treads.

### Blanks Are Purchased

Although this company has a subsidiary which furnishes castings, large quantities of rolled, forged and hammer-forged blanks of steel and alloy steels, are purchased according to the product to be made. The main plant is new and modern in every way and while the greater part of the production includes a variety of special jobs, as mentioned previously, piece rates have been worked out so that 90 per cent of the work carries a premium allowance. These rates were developed from accurate time studies, predicated on elaborate and carefully determined charts which show the capacities of each machine for different jobs to which they might be assigned.

One division is equipped with heavy-duty boring mills and turret lathes, for turning, boring and facing blanks. Another section has batteries of machines for cutting teeth in spur, bevel and herringbone gears; as well as hobbers and planers for producing every kind, pitch and shape of teeth. A wide range of miscellaneous tools is located in another section and includes drill presses, key seaters, shapers, millers and grinders, as well as some specially designed equipment. Another division is given over to the development of special machines and products and includes an extensive testing laboratory. Other laboratories for chemical, physical and microscopic tests are maintained.

One of the largest heat treating plants in the country equipped to treat steel products of large size is operated by the company. Most of the furnaces are located along one sidewall with quenching tanks in front, and are served with a 5-ton traveling crane of 45-foot span, running the entire length of the building. Most of the larger furnaces are of the car-bottom type and can be used interchangeably for carburizing or other heat treatments.

### Low-Carbon Steel Used

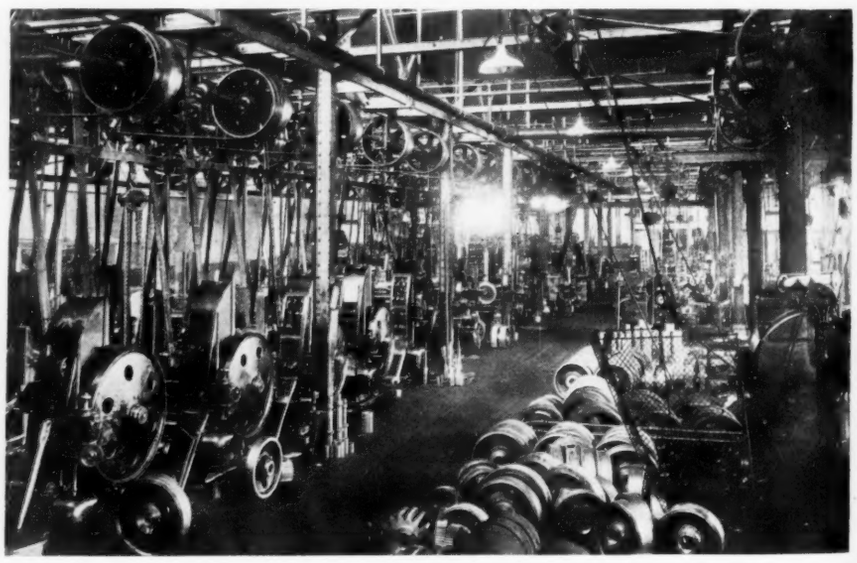
While various types of alloy steels are used most of the work is made from steel of about a 0.20 per cent carbon. After carburizing, the surface carries from 0.90 to 1.20 per cent carbon and is somewhat similar to high-grade carbon tool steel. The hardness of this surface ranges from 90 to 100 on the scleroscope. About 16 large furnaces are used for carburizing and subsequent heat treatments. Packing of parts in the carburizing boxes is done in a separate room at one end of the building, and the boxes transferred to the furnaces by crane.

All furnaces are of heavy brick construction suitably stayed and fired with gas. The first is about 12 feet long, 9 feet wide and 8 feet high and is encased in steel plates. Heat is supplied by four gas blast burners on each side. Separate combustion chambers are provided for these burners, in the shape of refractory-lined, steel boxes of about 3 feet square, these being located along the two sides of the furnace, at the bottom, and are closed off from the heating chamber of the furnace. Heat rises through flues in the furnace wall and is admitted to the furnace through openings at the springline of the arch.

Air is supplied to the burners at 1 pound and gas at 4-ounce pressure and the gas-air ratio is regulated for any furnace atmosphere, reducing, oxidizing or neutral, with a two-valve control. The front of the furnace is equipped with a counterweighted door, through which the cars of boxes pass on tracks. The tops of the cars are of refractory material and the edges form a suitable seal with the furnace walls to prevent the heat of the furnace from descending into the compartment below, where the wheels and undercarriage operate. These cars are pulled into and out of the furnace by winch.

### Furnaces Are Duplicates

The next two furnaces are practically alike, being 16 feet long, 12 feet wide and 10 feet high. The feature of these units is that of a double arch, the lower one being perforated to allow the heat from the gas burners, which fire between the arches, to radiate on the work beneath. Three burners are located on one side and two on the other, firing against the lower side of the upper



*Main aisle of machine shop. The boring mill department is shown at right*

and solid arch, which is brought to incandescence, and the heat from this is radiated down through the openings in the lower arch. These furnaces are of the car-bottom type, with tracks and a single door in front. The doors, when closed, are held tight to the front walls with cams to prevent the escape of heat.

Next in line are four furnaces each 14 feet long 8 feet high and 8 feet wide. They are of the car-bottom type and the feature of the double arch is incorporated in their construction. Heat is supplied by three gas burners on one side and two on the other, all firing between the arches as previously explained. All furnaces are equipped with indicating or recording pyrometers as aids in temperature control.

Under-firing a stationery hearth built on piers, is the feature of the next four furnaces in line, each of which is 8 feet long, 8 feet wide and 5 feet high. Two gas burners on each side are used in each of these units. A portable charging platform on a level with the hearths serves these furnaces as well as an overhead monorail conveyor with an electric hoist. These furnaces are equipped with recording pyrometers to obtain a more sensitive heat control and an exact record of temperature fluctuations.

Water and oil quenches in large steel tanks are placed at convenient points of this line of furnaces and some of the tanks are cooled by pumping the liquids into and through other tanks with cold water coils. Two oil-drawing baths are provided each including a circular furnace of brick with a steel pot 5 feet in diameter. This is heated by a single burner firing tangentially to the inside of the brick wall thus producing a radiant heat. Smaller furnaces are used for other heat treatments.

### Employs New Type Hearth

A new and modern furnace having some unique features recently was installed. This unit is built of brick, is steel encased and is heated with six gas blast burners, three to a side. It is of the car bottom type, 9 feet wide, 14 feet long and 10 feet high. The hearth is an entirely new design, the top of the car being of refractory material with piers on which sets a series of rails with notches at close intervals and in these notches rest a series of alloy tubes to support the work. The burners fire beneath these tubes. An indicating pyrometer aids in temperature control. A large door in front is locked tight against the front wall by a cam on each side. This prevents the escape of heat through loose joints and is a feature of most of the furnaces in this division.

Many of the products are refinished after carburizing and heat treating. The refinishing division is equipped with batteries of different types of machines, grinders predominating. One of the grinders has a base similar to a lathe and is equipped with a moving wheel head. It is used for finishing large screws which are chucked and revolved while the wheel, which is mounted on the carriage, traverses the length and returns through a screw feed driven from the same motor as the chuck. This set-up takes work 21 inches in diameter and 10 feet long.

Another grinder, specially developed for grinding internal bores of small gears, consists of a special lathe base supporting a steel cylinder carriage with a hydraulic press mounted at each end. On the carriage, and traveling back and forth, are mounted two arms, one carrying a chuck and the other a grinding wheel. Both the chuck and wheel are motor driven and when a gear is chucked, both are pushed together, on the cylinder by the action of the presses until the grinding wheel has passed through the bore.

# Chemistry Aids Steelmaking Processes by Determining Substances in Steel

CHEMISTRY'S important role in steelmaking is emphasized in a report by Dr. C. H. Herty, supervising metallurgist of the bureau of mines, Pittsburgh, to the iron and steel section of the National Research council science advisory committee which is working on plans for an iron and steel exhibit at the Chicago World's Fair in 1933. This advisory committee is collaborating with the Chicago fair trustees in developing a science pattern for the exposition.

"The major role of chemistry in steelmaking processes," writes Dr. Herty, "has been to formulate methods for the determination of various substances in steel, and once the effect of these substances has been determined by the metallurgist, to assist in working out methods for the elimination of the harmful material.

"Up until recent years the contribution of the chemist has been on the analytical side rather than on any major developments, although some of the major developments have depended on the correct knowledge of what was in the raw materials and how certain elements could be eliminated from the steel.

"Scientific investigations on steelmaking processes may be divided into fairly definite periods as far as the type of work is concerned. From 1860 to 1877 considerable attention was given to gases in steel, this being because the bessemer and open-hearth processes were just coming into use and a good deal of trouble was being encountered with gases.

"The second period 1877 to 1899 saw much being done on the removal of phosphorus from iron, most of this work being carried out in England where high-phosphorus ores prevail and the phosphorus in the finished steel was generally too high to meet specifications of the finished product. Most of this research centered on the use of lime as a dephosphorizer and on studies on the function of both lime and iron oxide in dephosphorization of steel.

"In the period 1889 to 1902 a great deal of attention was given to the elimination of sulphur from iron and steel, the two main methods of attack being the use of manganese to desulphurize pig iron and the use of lime in the open hearth to desulphurize steel.

"During the period 1902 to 1912 the effects of oxygen in steel began to be appreciated and investigated. Some time before this Ledebur had developed his method for the determination of oxygen by reduction of the steel sample with hydrogen and during the above mentioned period a good deal of work was done on determining the oxygen content of various steels.

### Oxygen In Steel Studied

"The period 1912 to 1922 saw further attention paid to oxygen in steel and new method devised for the determination of the oxides. By this time the elimination of sulphur and phosphorus was pretty well understood and investigations on these two metalloids were rather infrequent.

"From 1922 to 1930 increasing attention was paid to oxygen in steel, with particular emphasis on the various types of oxygen compounds present, the nonmetallic inclusions in steel. The increased activity on this subject was largely due to the increasingly rigid specifications of buyers, particularly in the automobile trade."

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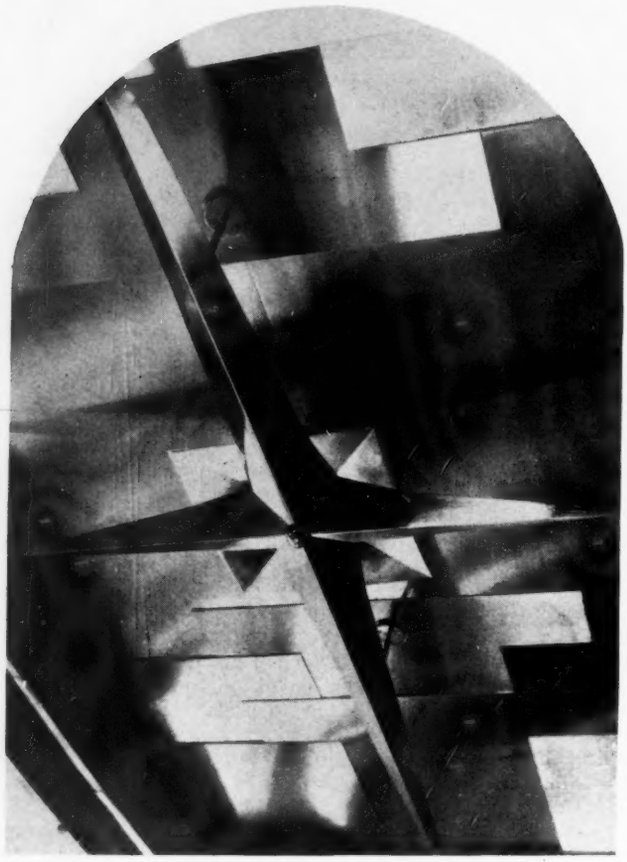
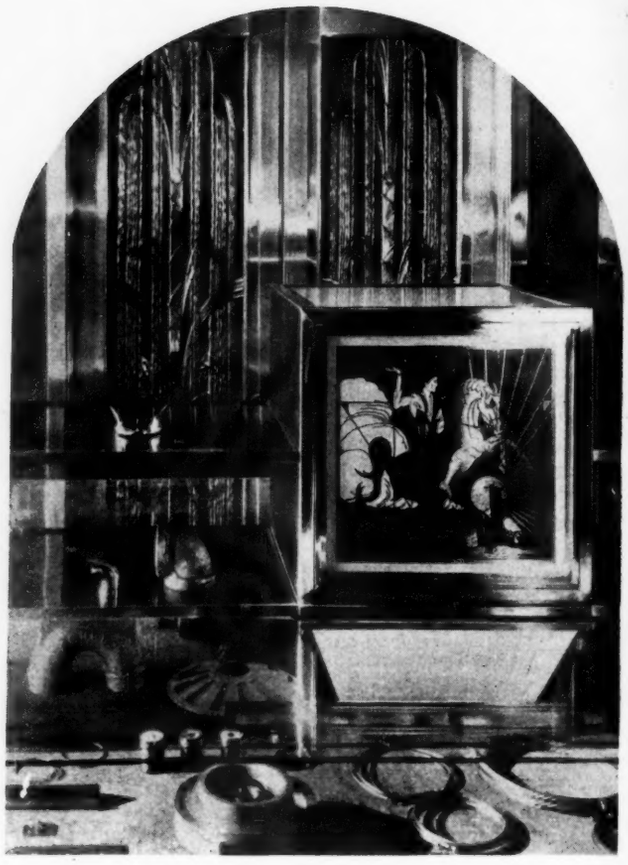
Officers for 1930-31 recently elected by the Rhode Island chapter of the American Society for Steel Treating are as follows: Chairman, Chester Hacking, Wm. H. Haskeel Mfg. Co. Pawtucket; vice chairman, E. W. Freeman, Brown & Sharpe Mfg. Co., Providence; and secretary-treasurer, Carl G. Peterson, Providence Gas Co.





# Co-operative Exhibit of Chrome-Nickel Products Is Proving Profitable

WITHIN ten days after opening its co-operative exhibit of products, the Krupp Nirosta Co. Inc., received from visitors inquiries representing a total tonnage equal to last year's full production of 18-8 chrome-nickel steel. The new exhibit room which is located at 2638 New York Central building, 230 Park avenue, New York, is of unusual design of modernistic type. The room itself is paneled with nirosta metal and is surrounded with cabinets and showcases made from this same metal and containing samples of rolled, drawn, forged, welded and cast products. A fabricator or manufacturer interested in the use of corrosion-resisting steel now is able to see actual samples of metal products machined and finished in nearly any manner.

While the executive offices of the Krupp Nirosta Co. Inc., will remain at Watervliet, N. Y., the nominal headquarters will be at the New York offices and showroom where the advertising and business departments will be located. A consulting metallurgist is connected with this New York office to give such assistance as visitors may require. So far the exhibit has attracted about 100 manufacturers a week and a larger number is expected as the exhibit is enlarged and becomes better known. The space is open for complimentary display of any of the products of the 48 licenses of the company within the limits of the space available. For the present, unusually large products cannot be shown although containers for food products, syrups and chemicals are now on display.

As an example of the value of the exhibit, a recent visitor, a manufacturer of penny-in-the-slot weighing machines, first inquired about certain small parts but the samples of cases and cabinets on display convinced him that the entire structure of a weighing machine could be made of corrosion-resisting steel.

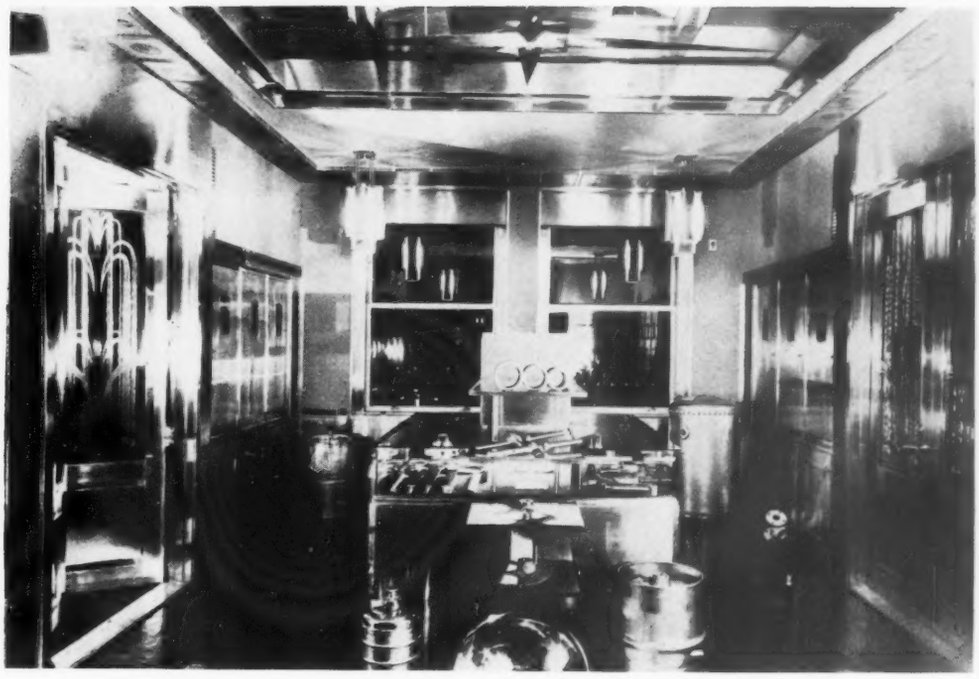
## Uses New Welding Process

One of the three steel scows now under construction by the Manitowoc Ship Building Corp., Manitowoc, Wis., for the Construction Material Co., Chicago, is being built by an electrical welding process along new lines recently patented by Chicago interests. The other two will be of the conventional riveted type. Each scow will be 135 feet long with 42-foot beam and a depth of 18 feet.

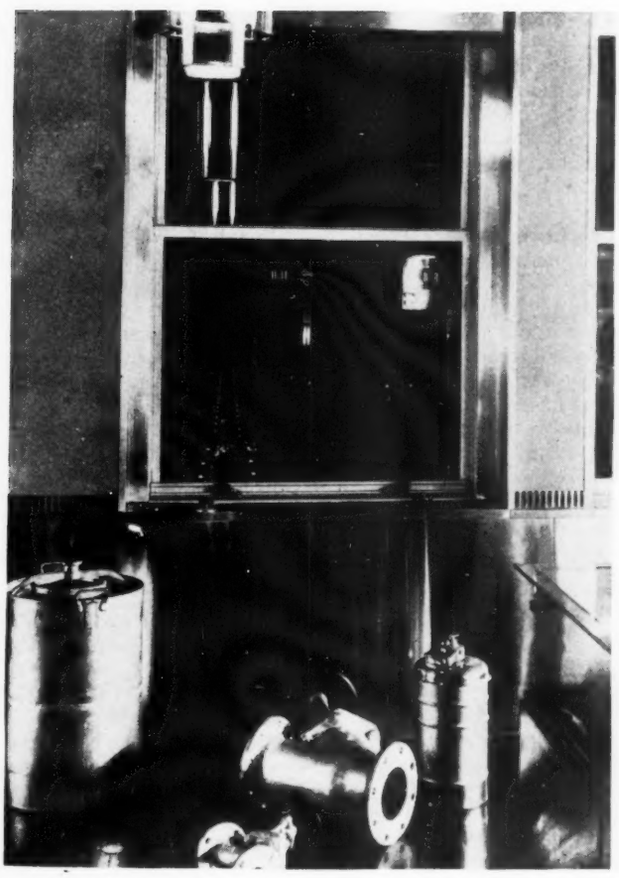
## Foreign Trade Council Publishes Its Proceedings

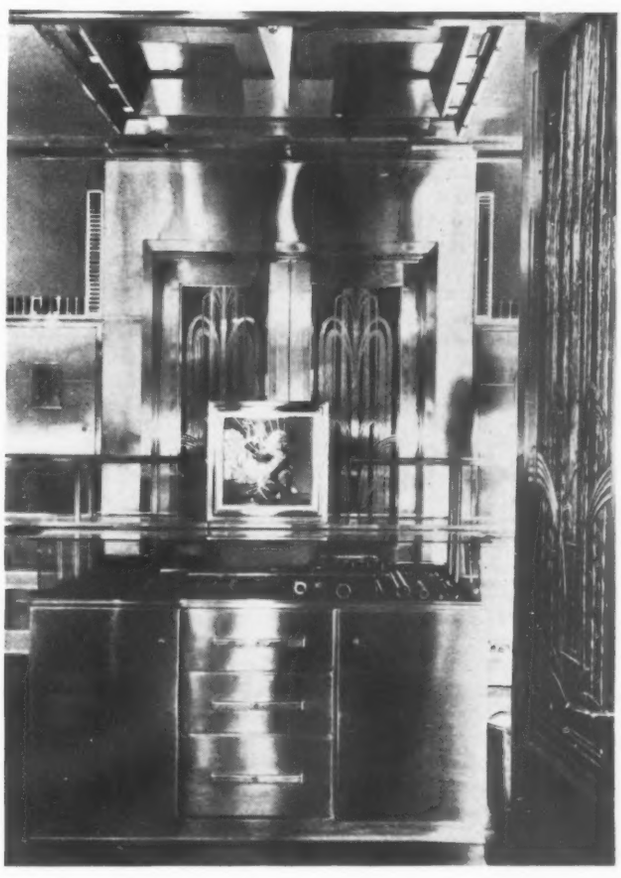
National Foreign Trade council, New York, has published a volume of the proceedings of the seventeenth National Foreign Trade convention at Los Angeles in May. It is a complete presentation of 38 addresses on various foreign trade phases and verbatim reports of general and group sessions. Carefully indexed, it provides access to various facts in the addresses and discussions.

Facts available in no other place have been assembled by speakers and writers for this session and all are preserved for the use of foreign traders in this volume.



ILLUSTRATIONS on this and the opposite page show portions of the co-operative exhibit of heat, acid and corrosion-resisting products recently opened in New York by the Krupp Nirosta Co. Inc. Here manufacturers interested in using the new chrome-nickel steel can examine hundreds of applications in rolled, forged, drawn, spun, welded and cast form.





# Analyzing Failures in Wire Rope with Steel Center

BY L. E. WYATT

American Cable Co., New York

USERS of wire rope usually find that in cables with independent wire rope center the steel center fails before the strands. This premature failure of the steel core does not of itself weaken the rope seriously, because it forms only 1/7 of the steel in the cross section, and theoretically at least, the rope should have 6/7 of its strength remaining after failure of the center. Or, looking at it from the standpoint of working load, the six regular strands would be loaded only about 17 per cent more after the center fails.

It might seem that this moderate increase in working load would not have any striking influence on the life of the rope, but in practice it is found that a cable does not stand up to its work long after the independent wire rope center goes to pieces. This is because the purpose of the steel core is not primarily to add its strength to that of the six regular strands, but rather to provide a center of such firmness that it will not crush and permit the rope to flatten when it winds on a drum under heavy tension. When the core breaks up or pulls down, this support of the strands is lost and the rope will flatten out, strand and break. Except for this it would be preferable to add 17 per cent of steel to each of the regular strands and retain the customary hemp center. This does not apply to nonrotating rope in which the steel core serves another purpose.

### Overloading Causes Core Failure

The belief has been general that the earlier failure of the independent wire rope center was because the core lies straight down the axis of the rope as contrasted to the strands that lie in a helical form around it. The helical arrangement of the strands gives a certain small measure of coil spring action, whereas the core is straight and shorter than its helical companions, thus when the rope as a whole springs under load, the spring or temporary stretch must be absorbed in a shorter length of core than of strand. This means that the fiber stress in the core always is greater than in the strands, and as it forms only 1/7 of the cross section it can be overloaded readily, perhaps to the yield point where it takes a permanent stretch or at least to a point of fairly rapid fatigue.

So reasonable is the theoretical basis for this explanation that it scarcely can be discarded. On the other hand, actual experience in the practical use of wire rope has brought to light evidence that overloading of the steel core is not the only, or even the chief, cause of rapid core failure. This evidence comes from the midcontinent oil field.

### Withstands Severe Treatment

Here a number of operators have been using preformed wire rope with independent wire rope center on rotary drilling rigs. Lowering and lifting strings of casing running into thousands of feet, not to mention pulling loose casings that have stuck in the hole, this cable is heavily loaded. Under the theory of over stretching the steel core, it would seem that this service would provide a good example of premature core failure.

Exactly the opposite is true. Not only is the life of these preformed ropes consistently and substantially above the average, but when the ropes finally are discarded, a postmorten examination shows the steel center to be intact and in better condition than the surrounding strands.

As is well known, a cable made by laying up straight strands must, when cut, have the end seized to prevent unlaying, otherwise the elasticity of the steel causes the strands to spring out of the helical shape into which they have been twisted. The higher the grade of steel, the higher is the elastic limit, hence the greater the extent to which the strands will straighten out when released, and the greater the force which, either as seizing at the end or as continuation of the helix in the body of the rope, must be applied to hold the strands in their helical form.

Since action and reaction are equal and opposite, it is obvious that these strands are pressing inward against the core with the same force as that which makes them tend to spring outward. Of course, if the core had a clearance due to being undersize by wear or otherwise, the pressure on the core would be replaced by arch action among the strands. Undersized core, however, would fail its purpose of maintaining the contour of the rope under pressure against the drum, and in fact this is precisely why a cable wears out rapidly.

Contrasted with the foregoing, preformed rope involves no such state of constant pressure between strands and core because the strands before assembly have been given a permanent set to the precise form they are to have in the finished rope and therefore are in a state of zero bending stress.

It is believed that the absence of inherent strand pressure against the core in a preformed rope eliminates most of the internal friction and spares the wire rope center from a corresponding amount of wear throughout its cross section, but especially at the six lines of contact with the strands. This wear due to contact under considerable pressure tends to nick the outer wires of the core.

In either case the points of reduced wire section are weaker against bending stress, invite a concentration of flexion, and eventually fail by fatigue. As compared with the outer strands, all of these conditions are aggravated in the steel core, and it is not surprising that when operated under pressure from the strands the core should be the first to fail. Neither is it surprising that when freed from continual strand pressure, in the preformed construction, the core should wear substantially less than the outer wires of the strands.

### Drill Rope Undergoes Flexing

It is significant that these facts regarding the behavior of cables with independent wire rope center should have become strikingly apparent in rotary drilling lines. In this service the rope passes over a series of six to ten sheaves in the tackle blocks, as well as spooling on the drum, involving a large amount of flexing, especially as the sheaves are none too large. As internal wear is a function of flexing action it is natural that the facts related and the explanation offered should have come to light in service where flexing is pronounced.

The internal wear hypothesis herein set forth does not exclude the overloaded core theory. On the contrary, an overloaded core is obviously more susceptible to fatigue by flexion at the points where wire cross-section has been reduced by internal wear. The two explanations are not antagonistic, but complementary. Both theory and practical experience agree that in cables with independent wire rope center every effort should be made to reduce to a minimum the pressure between strands and core.

# INVESTIGATE

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**Mesta Machine Company**
Pittsburgh, Penna.

# Waldorf-Astoria Steel Is Found Well Preserved

BY F. H. FRANKLAND

Director of Engineering Service,
American Institute of Steel Construction Inc., New York

EXPERIENCE indicates that structural steel used in modern buildings will far outlast the usefulness of the structures. Tests made under the direction of the American Institute of Steel Construction show that the steel taken from buildings now being demolished is in practically as good condition as when erected.

Structural steel has been in use only since 1885 and steel-frame buildings have been erected for less than 50 years. At best we can obtain only comparative results from buildings that have been up not much in excess of 40 years. The Tacoma building in Chicago, one of the first skyscrapers in the country, was only 42 years old when demolished in 1929. The old Waldorf-Astoria hotel in New York, demolished in 1930, was built in two parts. The first on Thirty-third street and Fifth avenue was erected in 1891, whereas the second part on Thirty-fourth street and Fifth avenue was build in 1895.

Through the courtesy of the general contractors for the new Empire State building, Starrett Bros. & Eken, who wrecked the old buildings of the Waldorf-Astoria hotel, the American Institute of Steel Construction was able to obtain 15 samples of material from the iron and steel, flame-cut from I-beams, flange plates or built-up girders, and various parts of the built-up columns. Arrangements were made whereby the assistance and co-operation of F. N. Speller, director of the department of metallurgy and research, National Tube Co., Pittsburgh, were obtained in having chemical and physical tests made of the 15 specimens.

### Withstands March of Time

Several careful examinations of the iron and steel work during the wrecking process were made from which it was apparent that, in general, the metal was so well preserved that shop markings and stencils were easily readable. One coat of red oxide paint had been applied to the iron and steel of the old building and one coat of black paint to that in the new building, and the only effect of time had been to dull the high gloss of the paint. The only evidence of corrosion found was in four small Z-bar columns in the court where roof leaks had permitted rainwater to enter the interior of the scagliola column incasement, and a careful examination of this rusting showed that less than 1 per cent of the net section had been lost by corrosion, notwithstanding the fact that these columns had probably been saturated with water for many years.

Results of these examinations provide convincing evidence that no deterioration of building steel work occurred where protection had been provided, although such protection as the Waldorf-Astoria steel received was not up to the standard of present-day practice. The steelwork of the Tacoma building, erected in 1887, received one shop coat of linseed oil and was not field-painted, yet a thorough examination by a representative of the American Institute of Steel Construction showed that the shop markings were easily readable and in many cases the gloss on the oil was still intact.

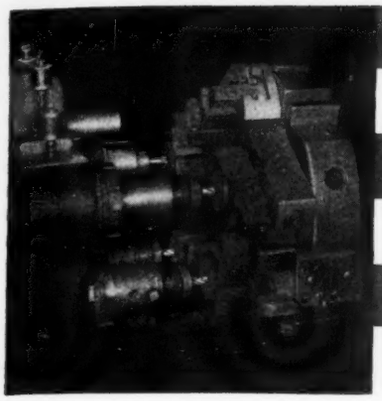
Most of the 15 samples submitted to Mr. Speller for examination appeared to be steel, although in three or four cases the etching tests showed laminations similar to those seen in wrought iron, probably due to what would be considered unusually dirty steels according to present-day standards. The chemical analyses demonstrated definitely that there were only two wrought-iron samples in the group. Of the 13 steel samples five were judged to be of open-hearth origin, and eight of bessemer origin.

The tensile tests were made on

## Tests on Samples from Waldorf-Astoria Building

| Sample Designation | Chemical analysis: Carbon, per cent | Manganese, per cent | Sulphur, per cent | Phosphorus, per cent | Silicon, per cent | Tensile properties: Yield point, lb./sq. in. | Ultimate strength, lb./sq. in. | Per cent Elong. over 1.6 gage | Per cent red. of area | Izod impact strength ft.-lb. | Fatigue endurance limit, lb./sq. in. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15-in. header, Waldorf (old building) 24 ft. 11 in. long, southwest corner, main floor, 33d St. side | 0.018 | 0.07 | 0.023 | 0.200 | 0.110 | 36,800 | 51,700 | 17.5 | 17.5 | 20.0 | 27,000 |
| 34-ft. 2-in. girder, 27 in. depth, third floor, (Waldorf) (old 33d St. building) S. W. corner 33d St. | 0.14 | 0.61 | 0.031 | 0.044 | 0.007 | 39,300 | 61,600 | 37.5 | 62.5 | 46.5 | ..... |
| Outside plate, truss column, Astor Court and 33d St., 3 ft. above third floor | 0.17 | 0.54 | 0.050 | 0.073 | 0.020 | 32,900 | 60,800 | 40.5 | 61.5 | 22.4 | ..... |
| Third floor, Waldorf building, 33d St. | 0.14 | 0.66 | 0.076 | 0.096 | 0.026 | ..... | ..... | ..... | ..... | ..... | ..... |
| Inside plate of truss column. 3 ft. above 3d floor. Waldorf Building, Astor Court and 33d St. | 0.17 | 0.58 | 0.047 | 0.071 | 0.016 | 33,500 | 60,800 | 39.0 | 61.5 | 14.6 | ..... |
| 10½-in. floor beam, old Waldorf building, S. W. cor. 33d St., first floor | 0.016 | 0.05 | 0.030 | 0.299 | 0.160 | 34,200 | 52,600 | 20.5 | 23.0 | 23.1 | ..... |
| 4 x 4 x 20-ft., old Waldorf building, 2d floor, S. W. cor. 33d St. | 0.16 | 0.73 | 0.082 | 0.086 | 0.020 | 41,900 | 66,700 | 38.0 | 60.0 | 27.8 | ..... |
| From column on 6th floor, Waldorf-Astoria building | 0.10 | 0.52 | 0.076 | 0.095 | 0.104 | 37,900 | 60,900 | 30.0 | 46.0 | 11.2 | ..... |
| Part column, 8th floor, 34th St. side | 0.13 | 0.75 | 0.072 | 0.091 | 0.013 | 44,600 | 65,200 | 36.5 | 57.5 | 48.9 | ..... |
| 18-in. header, 2d floor, 34th St. and Fifth Ave. | 0.14 | 0.53 | 0.061 | 0.095 | 0.010 | 40,000 | 62,000 | 38.0 | 61.0 | 7.0 | ..... |
| 20-in. header, 8th floor, west end, 34th St. side | 0.25 | 0.58 | 0.043 | 0.007 | 0.007 | 37,500 | 60,000 | 35.0 | 55.0 | 15.4 | ..... |
| 27-in. girder, 34th St., Fifth Ave. side | 0.13 | 0.71 | 0.097 | 0.101 | 0.010 | 50,400 | 66,000 | 37.5 | 58.5 | 42.7 | ..... |
| Batter post, outside plates | 0.28 | 0.46 | 0.034 | 0.014 | 0.008 | 40,500 | 65,700 | 39.5 | 63.5 | 38.4 | ..... |
| Inside plate, batter post | 0.27 | 0.46 | 0.034 | 0.014 | 0.004 | 36,800 | 65,200 | 39.0 | 58.5 | 16.2 | ..... |
| 27-in. girder, 3d floor, Fifth Ave. and 34th St. | 0.16 | 0.44 | 0.037 | 0.011 | 0.005 | 36,300 | 55,000 | 43.0 | 68.5 | 64.7 | 27,000 |

# PURCHASING AGENTS ARE SAVING THOUSANDS OF DOLLARS ON REAMERS . . . . . BY USING THESE FORMS



THE first step in any cost reduction program is to *know the costs.*

So it is with reamers. Unless you know what percentages of the prices paid for various reamers can be charged to each hole reamed, any choice you make can be little better than a guess.

Reamers vary in quality and price. The number of holes each will ream depends on local shop conditions, regrinding, and the type of job on which they are used. Only one method of cost finding takes all these factors into account. That method is a carefully checked *"cost-per-hole"* test made *on the job.*

Such a test led to an 83% reduction in reamer cost in the plant of a large eastern appliance manufacturer, pictured above. Reamer cost chargeable to one hole was found to be $0.006 for solid type reamers then in use. For Peerless High Speed Expansion Reamers, the cost was $0.001 per hole including four regrindings. Peerless' margin of superiority in number of holes reamed was 5 to 1.

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0.400-inch diameter by 2-inch gage length specimens machined from the samples. Their percentage elongations are reported over 1.6-inch gage lengths, this length being geometrically similar to the usual 2 x 0.500-inch diameter A. S. T. M. specimen. The tensile test results show nothing unusual for the analysis and grades of material under consideration. The impact tests were made using the regular 0.394 x 0.0394-inch Izod specimen carrying a V-notch 0.079 inch deep. The results seem to show quite a good deal of scatter, but this would be expected on any miscellaneous collection of samples varying as much in analysis and method of manufacture as the present ones. Impact tests frequently show very erratic results without the reason for this being apparent from the results of chemical analyses or the usual tensile tests applied to structural steel.

Fatigue tests were made on one of the steel samples and on one of the wrought-iron samples. The results of these tests, as was the case in the tensile tests, show nothing unusual. Both gave endurance limits of 27,000 pounds per square inch, which check nicely with previous results obtained at the National Tube Co.'s research laboratory on modern wrought-iron and modern low-carbon open-hearth steel.

It is safe to conclude that if due allowance be made for the differences in chemical analyses and in the methods of manufacture the various mechanical tests have given results of about the order which are to be expected from similar materials if manufactured today. This would indicate that there has been no serious deterioration of these metals during the 35 or 40 years of service in the Waldorf-Astoria building.

It is interesting to compare the chemical analysis of the 13 steel specimens shown in the accompanying table with that of steel removed from the Tacoma building in Chicago, which was wrecked in 1929 to make way for a modern skyscraper after 42 years of service. The Robert W. Hunt Co., Chicago, made a chemical analysis of the steel from the Tacoma building at the request of the American Institute of Steel Construction with the following result: Carbon, 0.12; manganese, 0.40; sulphur, 0.032; phosphorus, 0.063 per cent. The acid etching of a polished section of this steel, compared with a similar surface of wrought iron, showed a characteristic steel face and an absence of slag inclusions.

*General view of the forging shop showing the heating furnaces and hammer equipment*

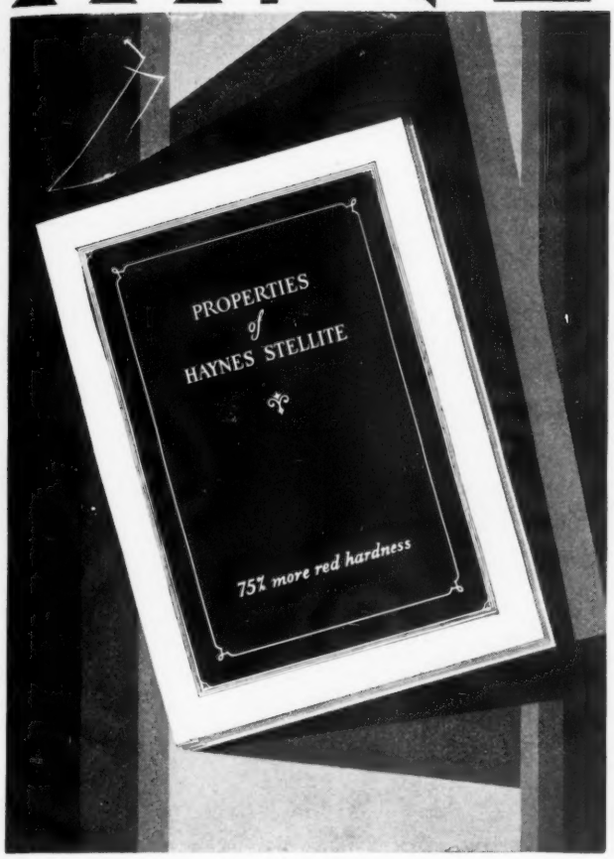
# Careful Analysis of Costs Aids Plant Operation

COMMERCIAL drop forgings offer a field of manufacture which a number of plants, both large and small, find profitable. A small plant, recently embarked in the production of small drop forgings of miscellaneous types, is the Alliance Drop Forging Co., Alliance, O. Installation of the newest and most efficient designs in forging equipment, rapid handling of all production work, and careful attention to costs are fundamentals upon which this organization is building success. Included in the forging specialties which the company produces are small drop forgings up to 4 pounds in weight—clevises, cash register parts, general automotive parts, parts for agricultural implements and machine tools and other small items forged to customers' specifications. Floor space is available for the eventual installation of 12 hammers, four of which are already in operation. Two of these, 1600-pound and 1200-pound board drop hammers, are a new type of motor-driven, hammer designed by Billings & Spencer Co., Hartford, Conn. Capacities are 600 and 500 pounds of finished forgings per hour. Simplicity is the feature of the design of these hammers which embody reversible double V guides, a straight friction bar and straight roll releasing lever, and a roller bearing head, all making for smooth, fast and accurate operation. The direct motor drive eliminates the adverse features of lineshafts and overhead belts.

Two other hammers, driven through a lineshaft and belts, are of 2000-pound and 800-pound capacities and will forge 800 and 300 pounds of material an hour, respectively. The accompanying illustration shows the interior of the hammer shop, including the four hammers and furnaces for heating the stock, shear, trimming press and other production equipment.

Furnaces, motor blowers, burners and other furnace accessories were

# NEW




## EDITION OF

# "Properties *of* Haynes Stellite"

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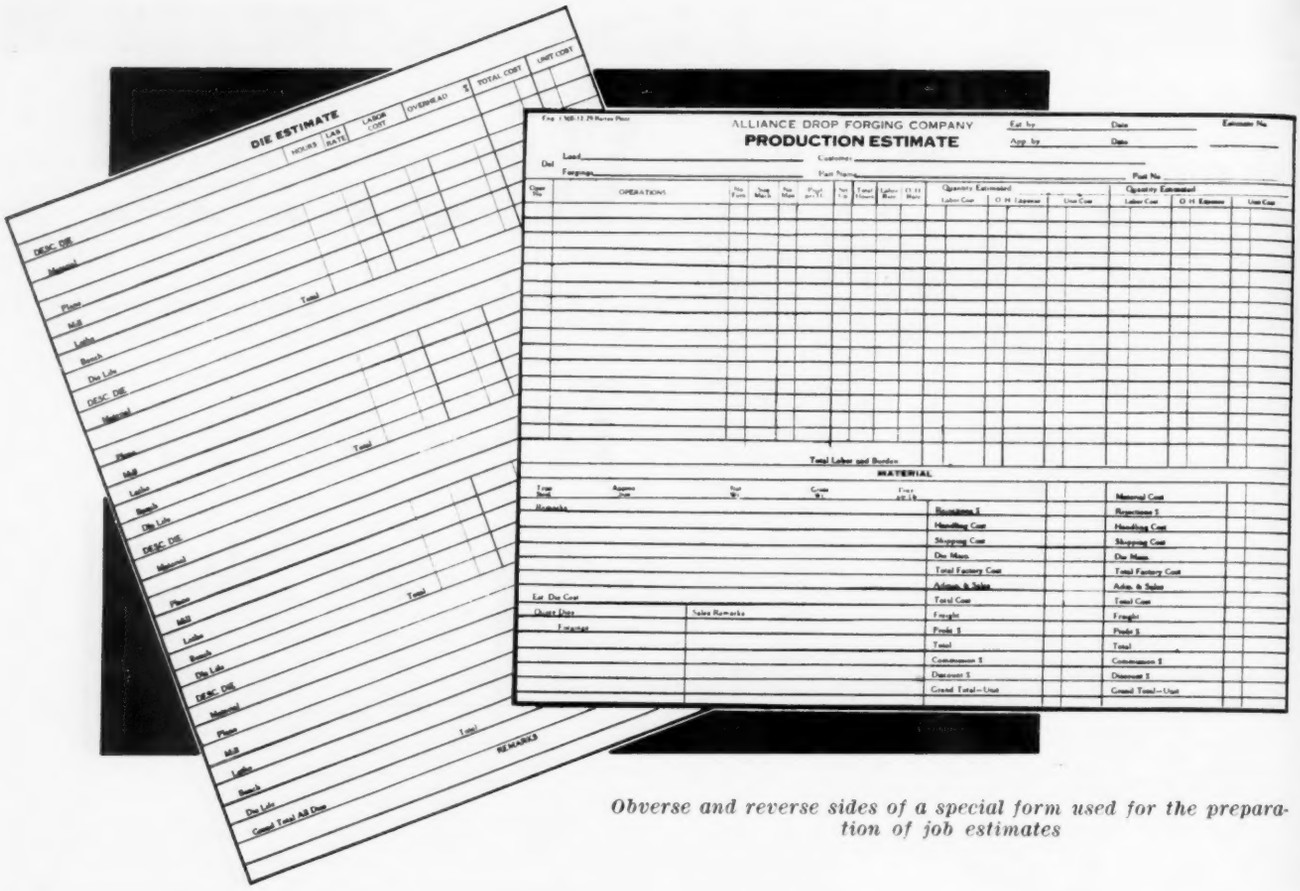



*Obverse and reverse sides of a special form used for the preparation of job estimates*

built by the Volcanic Specialties Co., Alliance, O., and designed to operate on either natural gas or fuel oil, the change from one fuel to the other being effected by the operation of two valves on the furnace. Burners are designed and built for heavy oil, that is, oil low in gravity and high in viscosity. Each furnace unit is insulated against heat losses, and in actual operation has proved to come up to heat rapidly, not over 45 minutes being required to bring the furnace from normal to charge heat. Capacities of the furnaces are identical with the production capacities of the hammers with which they are operated, one furnace supplying each hammer. Motor blowers supply air not only for combustion but for air curtain and scale blowing. Each heating unit is complete in itself and if any change of location is necessary it can be accomplished quickly, the only connections being the electric circuit and fuel lines.

### Plant Makes Own Tools

A complete machine shop is operated by the company where dies are shaped and all tools used in the plant are formed and sharpened. Equipment in this department includes a shaper, lathe, metal saw, two drill presses, a die-sinking machine, etc. Offices, machine shop and forge shop are all housed in an all-steel building 50 by 128 feet in size, located on a siding of the Pennsylvania railroad. Under normal operating conditions about 30 men per shift are employed.

Estimates for jobs are prepared on a special type of printed form which the company has devised. This form, shown in obverse and reverse sides in an accompanying illustration, insures a complete and accurate record of all cost items entering into the production operations, the material and the dies for any particular job. The various headings and subheadings should be self-explanatory.

Officers of the company are: President, K. E. Walters; vice president, C. S. Randolph; and secretary-treasurer, J. A. Saylor. All are experienced in the forging business, previously having been associated with Transue & Williams Steel Forging Corp., Alliance. The new company has received a good share of business from small orders for the Transue & Williams company.

## Press of Unusual Design Is Demonstrated

Marquette Tool & Mfg. Co., 6499 West Sixty-fifth street, Chicago, well known as a manufacturer of pneumatic die cushions entered the machinery building field on Aug. 27 with a public demonstration of its new piercing and blanking press with four-point suspension. In many respects this represents a considerable departure from conventional punch press design, and its unusual performance justifies its novel features. An illustrated description covering details of contruction and operation of this interesting machine tool will appear in an early issue of STEEL.

## Makes Corrosion-Resistant Paints for Varied Uses

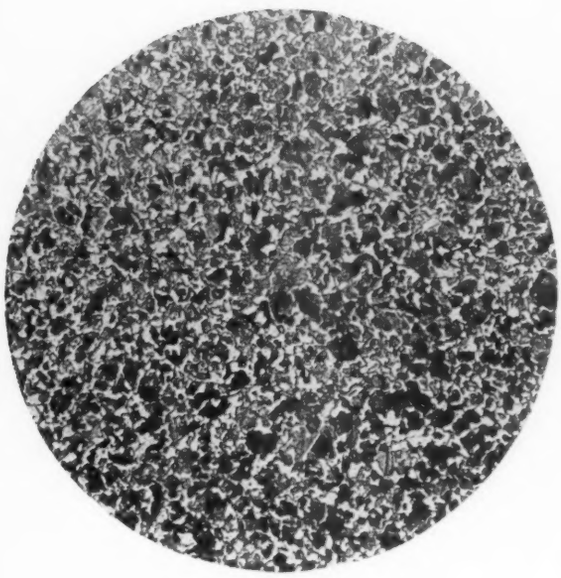
Corrosion-resistant protective paints for the protection of iron and steel structures and equipment have been developed to a high point of efficiency by the Semet-Solvay Co., New York. This company has brought out special formulas for resistance to weather; for use on high temperature apparatus; for shielding structural iron against acids and fumes; for counteracting soil corrosion; for protection of concrete and for preserving roofing. As new requirements develop, a constant program of development, research and test is going forward.

The Philadelphia Foundrymen's association Inc., recently re-elected the following officers: President, C. F. Hopkins, Ajax Metal Co., Philadelphia; vice president, B. H. Johnson, R. D. Wood Co., Florence, N. J.; and secretary-treasurer, Earl S. Sparks, 1623 Sansome street, Philadelphia, G. L. Coppago, Pusey & Jones Corp., Wilmington, Del., and Laird U. Park; Park & Williams Inc., Philadelphia, were elected to the directorate.

# Densite

## FOR LOCOMOTIVE AXLES

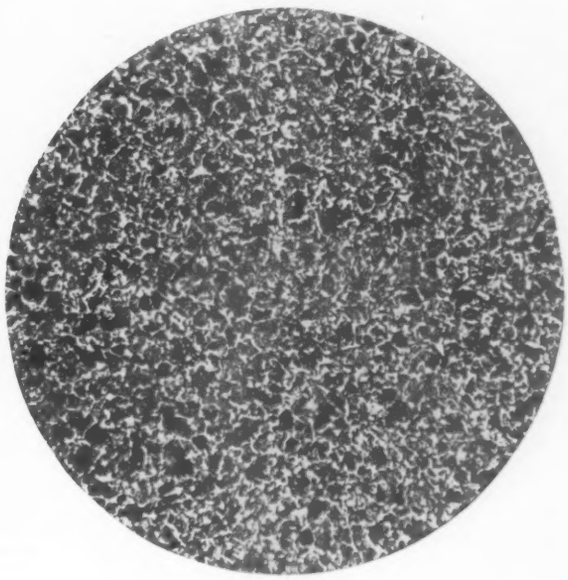
| C. | MN. | PHOS. | SUL. | SIL. | NI. | CR. |
|---|---|---|---|---|---|---|
| .46 | .63 | .018 | .029 | .25 | .13 | .11 |



100 X

Test from 12¾" Axle
ANNEALED
4 ft. from top of bloom.

| | |
|---|---|
| Tensile | 88730 |
| Y. P. | 48760 |
| Elongation | 26.5 |
| Red. Area | 49.1 |



100 X

Test from 12¾" Axle
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REFINED STEEL PRODUCTS COMPANY

Clark Bldg., Pittsburgh, Pa.

# Vanadium Additions Improve Properties of Steel

BY N. PETINOT

Assistant to President, Vanadium Corp. of America

## Part III

IT IS important to note the distinction between the methods of selecting automotive steels in Europe and in America. In the industrial countries of the European continent that engage in automotive or similar manufacture the mechanical properties as measured by the common practices in materials testing laboratories are the primary basis of selection. But by suitable combinations of carbon and one or more alloying elements it is possible in small sections to secure practically any reasonable requirements when measured in this manner. In the United States, on the other hand, the production of enormous quantities of exactly duplicated parts at low cost has necessitated building up production time schedules which have demanded for their perfect functioning, steels of absolute uniformity from forging to forging and melt to melt. This has meant uniform response to heat treatment and machining operations regardless of the usual manufacturing variables involved in furnace practice, rolling, forgings, etc. The ability to meet these requirements in a superlative degree accounts in a great measure for the success of vanadium-containing steels. Their consistent fine grain size and uniform grain characteristics have contributed to these results.

### Carbon Content Is Varied

Another important feature of automotive application is concerned principally with the chrome-vanadium steels. They form the only type composition that can be used for all structural cast or forged steel parts of the modern automobile merely by adjustment of carbon content to meet the desired mechanical properties. This makes possible the selection from the source of steel supply of melts within a narrow range of carbon content for application to any particular part. This is shown clearly for these chrome-vanadium steels of 0.08 to 0.55 per cent carbon, in Table IV. In addition 1 per cent carbon chrome-vanadium steel produces ball and roller bearings of distinctly superior qualities to those made of plain chromium steel and is being more and more widely adopted.

Of outstanding significance among the new practices in automotive steels has been the adoption of normalized carbon-vanadium steel for crankshafts, replacing quenched and tempered carbon steel. While originally applied and of primary importance in the long intricate shafts of "straight-eight" engines, smaller shafts and other parts of similar character benefit proportionately from its use and are increasing the application of this principle. Such crankshafts are re-struck and die-straightened at the normalizing temperature and are ready for machining without further heat treatment. They are free from internal strains, which usually are present in a quenched and tempered shaft, and consequently maintain their dimensions without warping throughout machining operations as well as when in service in the motor. A further advantage is the narrow range of hardness, or uniformity of mechanical properties, secured with this combination of steel and heat treatment over the usual range of composition limits (0.10 carbon, 0.30 manganese, etc.).

Practices in the young aircraft industry have in many respects closely followed those established in automobile construction and hence chrome-vanadium steel has taken a prominent position, being applied to all parts where alloy steels are required. A brief notation of the principal parts and their hardness ranges follows:

Master Connecting Rod and Link Rods
S.A.E. 6130 Brinell 283 to 302
Rocker Arms
S.A.E. 6125 Brinell 286 to 318
Crankshaft
S.A.E. 6135 Brinell 283 to 302
Generator Shaft and Pump Cross Shaft
S.A.E. 6145 Brinell 400 to 444
Pump Gears
S.A.E. 6140 Brinell 212 to 248
Cam Drive Gear, Crankshaft Starter Gear, Crankshaft Timing Gear
S.A.E. 6145 Brinell 400 to 444
Crankshaft Clamp Bolts
S.A.E. 6135 Brinell 335 to 360
Cam Drive Gear, Magneto Shaft, Starter Shaft
S.A.E. 6145 Brinell 400 to 444
Piston Pin and Link Pin
S.A.E. 6115 Carburized
Various Studs and Bolts
S.A.E. 6125 Brinell 225 to 250
Plane Fittings
S.A.E. 6130 (C. R. Sheet) Brinell 250 (Approx.)
Tail Skids
S.A.E. 6150 Brinell 387 to 444
Landing Gear Axles
S.A.E. 6125 and 6130 (Tubing) Brinell 250 to 350 (Approx.)

### Possess Welding Quality

Fuselage tubing has been made from many steels but in such service vanadium-containing steels possess marked advantages due to the superior properties of welds made in and with them. The tubing (of compositions such as S. A. E. 6125 and 6130) readily can be manufactured to yield the tensile properties generally specified. Furthermore, due to the fine grain of the deposited vanadium steel and the resistance of all vanadium steels to grain growth on heating, the weld itself, the junction with the tube metal, and the tube metal adjacent to the weld all possess toughness and impact strength of a superior order.

In the railroad industry, the demand for freight locomotives to handle heavier trains at higher speeds over longer distances and for passenger locomotives capable of pulling heavier loads without sacrifice of speed, has resulted in a continuously increasing use of alloy steel parts. The extent of the change from carbon to alloy steels may be realized from the fact that in the past 25 years metal-

THIS is the concluding installment of three comprehensive articles on the development of vanadium-containing steels in the United States, their properties and their present application in the various major industries. Part I dealing with the effects of vanadium upon steels was presented in the Aug. 21 issue of STEEL; Part II in the Aug. 28 issue considered the properties of vanadium steels and began a discussion of commercial uses; in the accompanying article the applications are concluded and the use of vanadium as a process element set forth. These articles were prepared from a paper read before the sixth International Congress of Mining, Metallurgy and Applied Geology in Liege, Belgium, June 22-28. The author, N. Petinot, is assistant to the president, Vanadium Corp. of America.

lurgical and engineering improvements have reduced the weight of representative locomotives from approximately 175 to approximately 100 pounds per horsepower.

Of all the alloy steels, carbon-vanadium has been used most extensively for locomotive forgings such as axles, crank-pins, main and side rods, piston-rods, etc. In fact carbon-vanadium and chrome-vanadium steels combined account for well over 70 per cent of all alloy steel railroad forgings now in use. The properties of these steels in heavier sections have been stated earlier in this paper. It is important to note in the values quoted, the high tensile strength, the high yield point and the maximum ductility and toughness consistent with these high strength values. Another important feature of these steels is the uniformity of grain structure, not only within a given forging, but also from melt to melt, which insures a freedom from variation in properties, and consequent variation in machining characteristics obtainable only to this degree in steels containing vanadium. Wherever the necessity for mechanical straightening, either cold or at elevated temperature, will not exist during the service life of the parts involved, the highest-strength heat-treated chrome-vanadium steel previously listed will permit of maximum weight savings. If, on the other hand, deformation and subsequent straightening may occur during service life, the use of the normalized carbon-vanadium steels is preferable since they are not adversely affected by heating for repairs and furthermore, develop higher strength values with extremely simple heat treatment (normalizing) than do other commercial steels usable for the same purpose when subjected to similar heat treatment.

### Railroads Adopt Alloy Frames

During the past 20 years carbon steel frames, due to the need for added strength and shock resistance, gradually have given way throughout the railroad industry to carbon-vanadium frames. With the substitution of this alloy steel frame breakage has been eliminated almost entirely so that the carbon-vanadium steel frames now are used widely. Crossheads, to the extent of several thousand, also have been made of carbon-vanadium steel. In the field of miscellaneous castings, a number of the railroads have found it advantageous to use carbon-vanadium steel piston head castings on account of their high strength, in order to eliminate failures caused by water in the steam cylinders. While carbon-vanadium locomotive frames have established themselves as more or less standard practice for the last 20 years, recently a nickel-vanadium frame has been developed which, in the short period of its existence, indicates great possibility of wide and general use on account of its superior physical properties. This statement is based on tests made on test bars taken from actual frame sections as well as coupon tests. The average properties of carbon-vanadium and nickel-vanadium frames are compared in the following table. This nickel-vanadium steel has been used even more widely for crossheads and other cast parts.

| | Carbon-Vanadium (Average values) Frame tests | Coupon tests |
|---|---|---|
| Yield point, lbs. sq. in. | 55,000 | 56,000 |
| Tensile strength, lbs. sq. in. | 85,000 | 89,500 |
| Elongation in 2", per cent | 25 | 25 |
| Reduction of area, per cent | 51 | 47 |
| | **Nickel-Vanadium (Average values) Frame tests** | **Coupon tests** |
| Yield point, lbs. sq. in. | 57,000 | 61,000 |
| Tensile strength, lbs. sq. in. | 85,000 | 88,500 |
| Elongation in 2", per cent | 28 | 28 |
| Reduction of area, per cent | 57 | 56 |

ry. The outstanding spring steel for automotive construction possessing advantages in respect to riding qualities, weight and life is chrome-vanadium, and although many times substituted by other steels, has been returned to, and is being returned to frequently, because unsatisfactory results occur in the use of cheaper products. These facts led to the introduction of chrome-vanadium steel into springs for sleeping cars, dining cars and special cars in railway work for exactly the same purpose—namely, to increase riding comfort, to decrease weight, to avoid settling, and to increase service life. The excellent results achieved in passenger car construction by the use of chrome-vanadium springs then led designers to apply this steel to the manufacture of locomotive and tender springs. It is apparent that, in a part where physical characteristics so directly determine both engineering design and performance, the superior properties of chrome-vanadium steel—in the maximum permissable stress, stress range, and other properties determining strength performance—are of great benefit. In many cases flexibility has been doubled over that of carbon-steel without exceeding the safe working range of the chrome-vanadium steel. Stress values are dependent, of course, upon the individual design and the specific demands made upon the material; in one instance a carbon steel design using a stress of 93,000 pounds per square inch at a static deflection of 3 inches was changed to chrome-vanadium steel with a stress of 112,000 pounds per square inch at 5⅛ inches deflection resulting not only in better riding comfort but a five-fold increase in life as well; in another instance where no change in riding qualities was required, it became possible to decrease the weight of each

**Table IV**

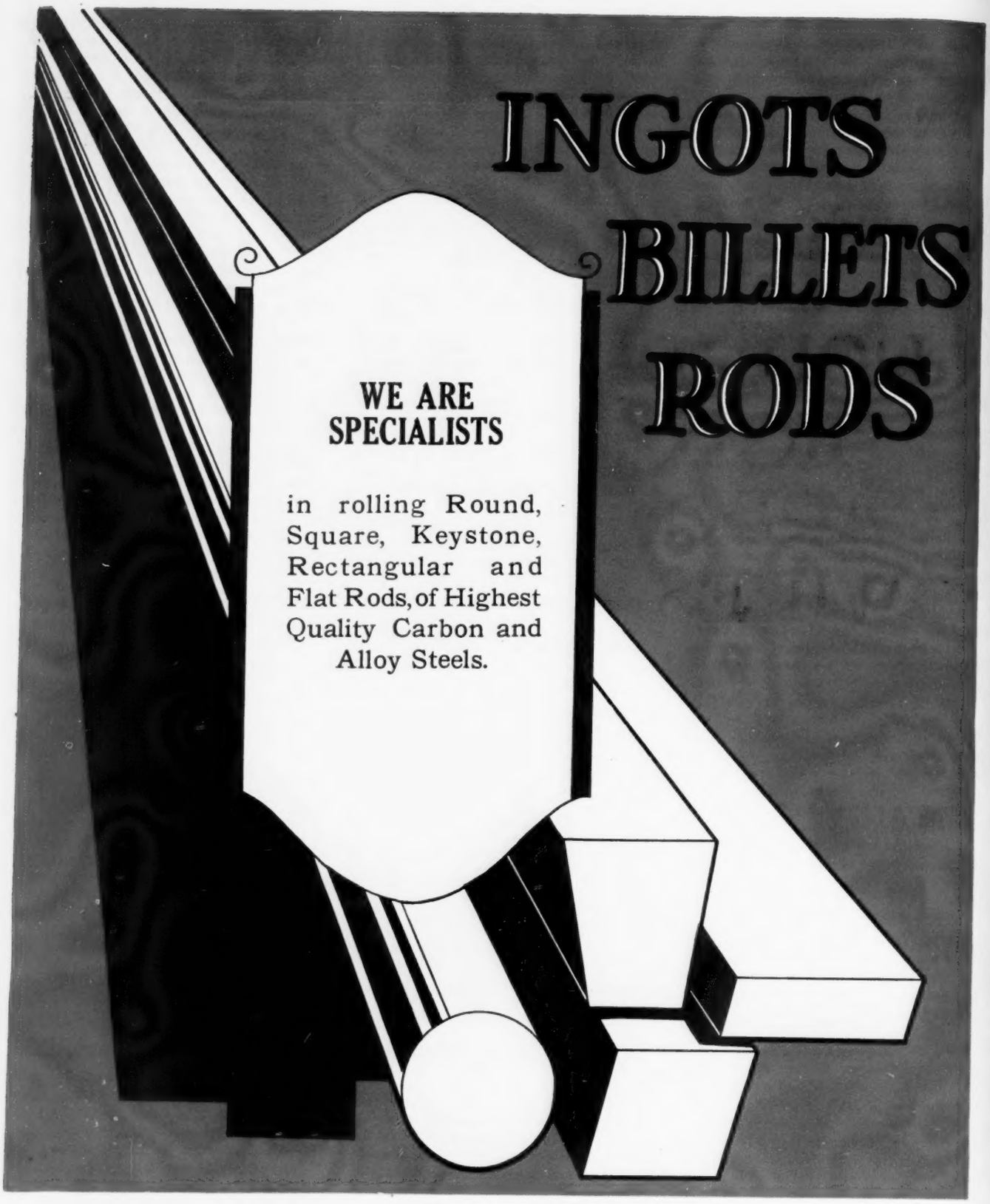
## Application of Chrome-Vanadium Steels

**(Cr. 0.80-1.10 V 0.15-0.20)**

| Application | Grade | Quenching medium | Carbon, per cent |
|---|---|---|---|
| Sheet and tubing when no heat treatment is given except for grain refinement. (1700-1750 degrees Fahr.) | | | 0.08-0.12 |
| Differential, cross-ring, transmission, timing and worm gears; differential and drive pinions; spline, clutch and cam shafts; clutch yokes; universal joint bushing; cross-steering knuckle pins; piston and push rods; tappet adjusting screws; bearing cups and cones; steering worms | Carbonizing | | 0.12-0.25 |
| Steering knuckles and arms, rear axle shaft, connecting rod bolts (oil quench), rocker arms | Heat treating | Water | 0.25-0.35 |
| Front axle connecting rods, tubing for universal joints | Heat treating | Water | 0.30-0.40 |
| Axle shafts, connecting rods | Heat treating | Oil | 0.35-0.45 |
| Transmission gears and spline shafts, drive pinions | Oil hardening | | 0.46-0.52 |
| Leaf and coil springs | Spring steel | Oil | 0.45-0.55 |

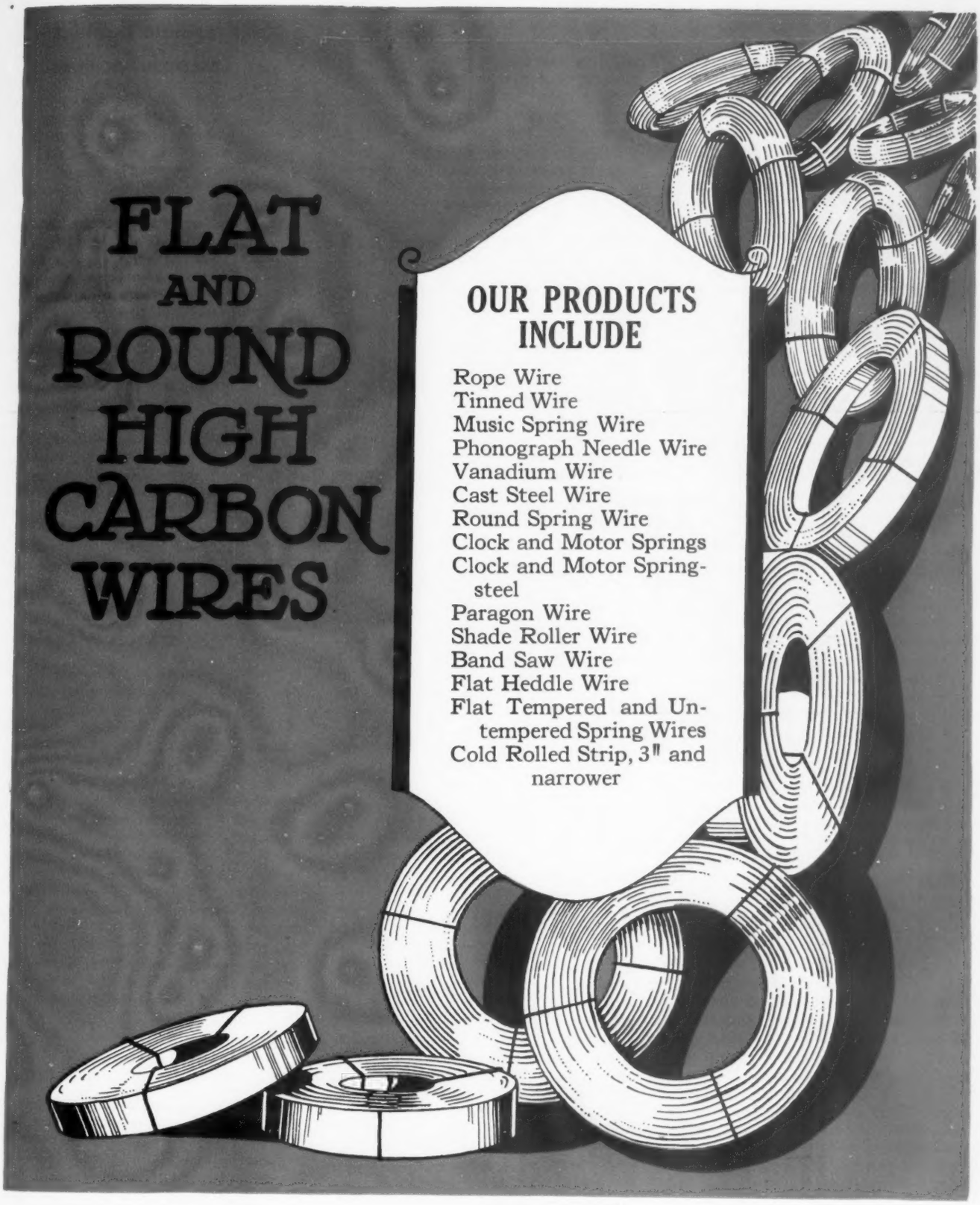
As a direct illustration of the weight savings and consequent economies that may be accomplished by the use of these vanadium steel forgings and castings mention may be made of a series of 20 recently-constructed locomotives in which the frames for each locomotive were reduced by 1900 pounds and the reciprocating parts (combined with the attendant change in counterbalance weight) were responsible for a further reduction of 1600 pounds.

The use of chrome-vanadium steel springs on locomotives and tenders has resulted from observations made in the course of the application of this spring steel in the automotive indust-




# Washburn Wire Co.

## Phillipsdale, R. I.




# Washburn Wire Co., Inc.

## 118th St. and Harlem River, New York, N. Y.

car by 400 pounds through application of the chrome-vanadium steel.

Although chrome-vanadium spring steel ideally is suited to the production of leaf springs, it also has been employed with success for heavy coil springs. Generally, however, coil springs are made from silicon-vanadium steel of carbon 0.88 to 0.98, silicon 0.50 to 0.70, and vanadium 0.15 to 0.20 per cent. A number of successful installations of this steel exist, both in the United States and in Europe.

### Boiler Pressures Increased

There is now an increasing trend to the use of higher boiler pressures in order to increase still further the thermal efficiency of locomotives, and because the limitation in size and weight of the boilers about has been reached for the lower pressures. With carbon steel firebox construction, pressures over 250 pounds are considered impracticable. The next limitation is the boiler shell, the weight of which increases rapidly with increases in pressure. It readily is apparent that there are great possibilities for the extension of these limitations by the use of alloy steel plates and rivets, by which these higher pressures can be met without increasing the weight of the boiler. There are already a number of locomotives in service and building in which alloy steel plates have been applied for this purpose. Vanadium steels are suited ideally to this application as a result of their excellent properties at the temperatures being employed in high-pressure boiler construction, their uniformity of mechanical properties in large masses and from melt to melt especially in the "as rolled" condition, and likewise their desirable and uniform fabricating qualities.

### Use Is Widespread

These same qualifications have caused widspread use of chrome-vanadium steels ranging from S. A. E. type 6120 to 6135 in the high-temperature processes now becoming so common in the chemical and other closely associated industries. For temperatures up to 500 degrees Cent. in some services, and occasionally up to 550 and 600 degrees Cent. in others, where corrosive conditions are mild, these steels function exceptionally well. Large forged vessels in the synthetic ammonia and oil industries have been highly successful; the steel appeals not only to the user because of the uniformly excellent mechanical properties but also to the manufacturer because of its excellent response to only ordinary manufacturing refinements.

As in locomotive construction, so likewise stationary boilers offer a field for vanadium alloy steels not only in the shell and rivets but also in tubing and this use is progressing rapidly. Welded construction is also assuming prominence in the production of vessels for general as well as elevated temperature service and the combination of these desirable mechanical properties with excellent welding qualities has resulted in a growing demand for chrome-vanadium steel for this use.

Other industries also have been large consumers of vanadium steels. In mining machinery carbon-vanadium and chrome-vanadium forged shafting, carbon-vanadium and chrome-vanadium cast gears, housings and crusher jaws; in machine tool manufacture, chrome-vanadium shafts, feed and lead screws, oil-hardened and carburized gears; in the oil industry chrome-vanadium steel in various parts of drilling machinery and drilling tools such as shafting, gears, cutting tools, tool joints, etc.; all these and many other applications have absorbed an appreciable tonnage. Then in industrial fields generally there have been the uses of special vanadium tool steels for tools, dies, jigs and fixtures of widely varying types noted in more detail in a previous section of this article.

### Details of Discussion

There have been described in this article the mechanical and fabricating properties of various vanadium-containing steels and the applications that have developed as a result of the beneficial effects imparted by the addition of vanadium, more particularly in the various carbon-vanadium steels, but in other quaternary and more complex combinations as well. Mention has been made frequently of the fine grain size and uniform grain characteristics of steels of which vanadium is a component. It has likewise been brought forth that this influence upon grain properties has been observed in steels to which only small amounts of vanadium have been added. This controlled decrease in grain size is highly desirable, imparting as it does, increased elastic strength, resistance to impact and a uniformity from melt to melt not consistently obtained by other means. Experience has shown that the actual amount of vanadium required to attain these results varies with the product to be made and the practice at each individual melting unit; further that grain control secured through these small additions, while definite, is not accompanied by the additional improvements in mechanical properties effected by the usual larger amounts of vanadium which undoubtedly greatly influence the character of the carbides or cementite. Nevertheless these small proportions are destined to play an ever-increasing part in rendering all alloy steels and high-grade carbon steel as well, more capable of meeting the demands of the engineer for reliability and uniformity in the raw materials entering into his production and his severely stressed structures.

## Battelle Institute Booklet Gives Research Facilities

In pointing out to industry its facilities for conducting research, the Battelle Memorial institute, Columbus, O., is distributing an attractive 32-page booklet entitled "Research in Industry". The institute, only recently established, will confine its activities to metallurgy and fuels. Although not organized for profit, the institute is self-sustaining from endowment, however, industrial concerns engaging the research facilities are expected to carry the costs of these projects.

The institute is prepared to deal with any problem relating to ferrous or nonferrous metallurgy, or to coal, gas, petroleum, and other fuels and to concentrate attention on these general fields, taking up such allied projects as the problems demand. It is equipped to carry on the research without outside personnel, although workers from any company may secure all needed facilities to carry on the work themselves. In either case, complete secrecy may be maintained and patent rights are retained by the sponsor.

## Steel Founders To Meet

Group meetings and discussions of cost and general operation problems will comprise the principal portion of the program for the regular monthly meeting of the Steel Founders' Society of America, to be held Sept. 11 at the William Penn hotel, Pittsburgh. Special addresses on the program for general sessions include "Industrial Research and Progress," by Dr. L. W. Bass, executive assistant, Mellon Institute of Industrial Research, Pittsburgh, and "Selling Steel Castings to Engineers," by Walter A. Dorsey, Alloy Cast Steel Co., Marion, O. On Sept. 10, the merchandising committee, the alloy casting division and the manufacturers of car castings will hold meetings at the hotel.

## Builds Unique Generators

The largest and smallest overhung-type hydroelectric generators are being constructed simultaneously at the Schenectady works of the General Electric Co. The largest, rated at 56,250 kilovolt-amperes, is to be installed on the Lewis river in Washington, and will be exceeded in capacity in this country only by those installed at Niagara Falls, which are not of the overhung type. Four of the smallest, rated at 3300 kilovolt-amperes each, will be installed this fall on the Connecticut river at McIndoes Falls, Vt.

Armstrong Spring Co., Flint, Mich., has reduced its capitalization from $863,000 to $589,000.

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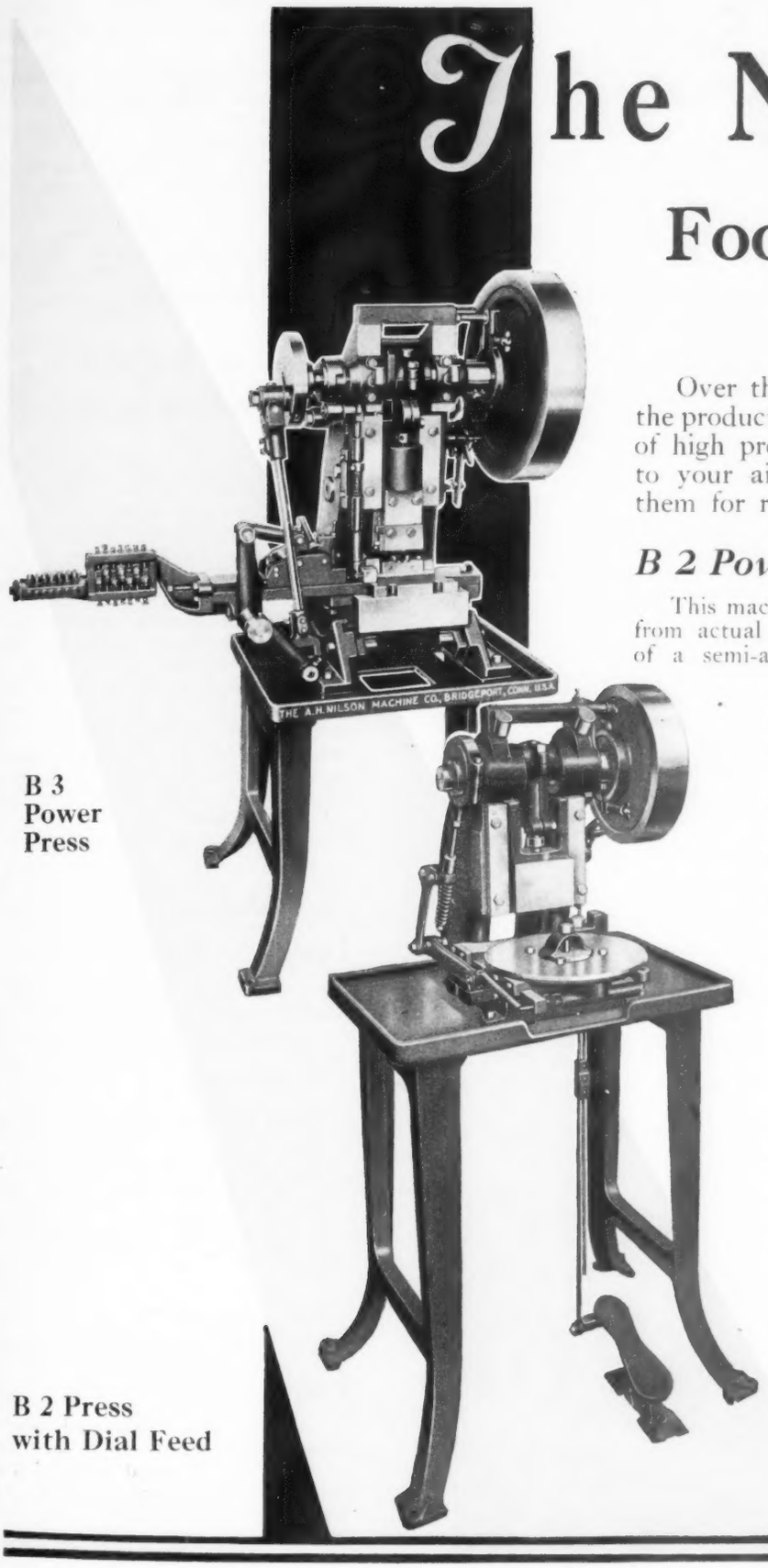
This machine, shown below, relieves the operator from actual labor—his work is merely the control of a semi-automatic machine. Safety clutch is provided which absolutely prevents repeating, regardless of whether or not the treadle is released. By turning a handle the press is instantly converted to a continuously running machine. The dial attachment consists of a circular steel plate which is operated by a pawl. On the top of this permanent dial different plates can be mounted in which carrying holes are cut to desired shape. A safety device instantly stops the press in case it ceases to function properly.




B 3 Power Press

B 2 Press with Dial Feed

### *The B 3 Power Press*

This press, illustrated at the top, possesses all the outstanding features of B 2 but is larger and more powerful. Rigidity and proportion are its characteristics. All bearings are extra long to insure smooth operation over a long period of time. No effort has been spared to make the construction suitable for accurate and rapid production.

**Get Bulletin No. 54 giving specifications and details.**

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# Large Uses of Steel in Small Ways

173rd Article ◆ Engine Foundations

ALL-STEEL foundations for engines in drilling oil wells are coming into general use, replacing wooden timbers. Not only is the steel foundations indestructible, but it is lighter in weight, stronger, and practically free from vibration. A company in Oklahoma City, Okla., is assembling and installing this type of support in the southwestern oil fields. About 300 wells have been equipped, nearly 200 of them in the Oklahoma City field and it is estimated that 1500 tons of steel has been used so far, or an average of 5 tons to a well.

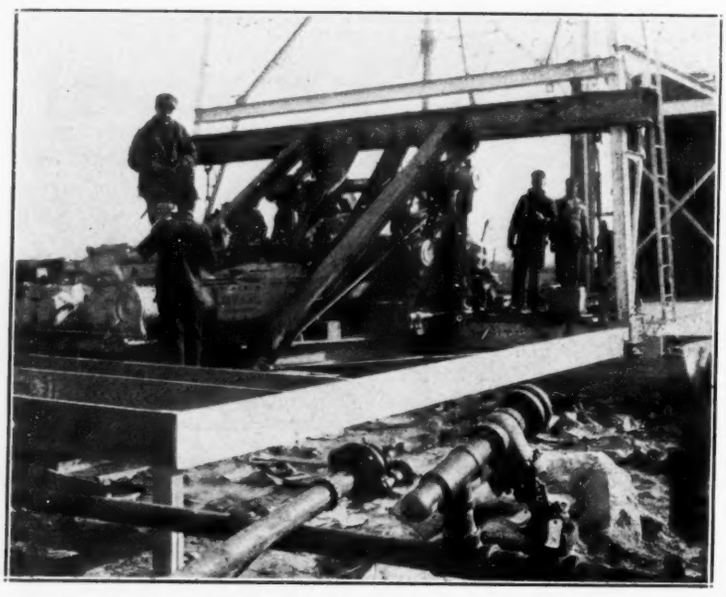
**Quickly Pays for Self**

The cost of a steel foundation is slightly higher than that of wood but it quickly pays for itself. Wells in the Oklahoma City field, for instance, are about 1¼ miles deep and the advantage of rigid engine foundations for drilling to that depth is apparent. Portability is highly important in the oil fields, and in being moved from one well to another steel equipment saves in freight about $50 per well.

Ordinary I-beams and plates, mainly the former, bolted together to form a platform, gives a good idea of the construction of the foundation. It is built according to the type and model of engine and draw works, and is made of either 50 or 60-pound beams.

One of the first wells to be equipped with this type of foundation was the famous Mary Sudik No. 1 in the Oklahoma City field, which came in flowing wild at an estimated 20,000 barrels per day, and was not brought under control for several days. In assembling the foundation for drilling this well three I-beams of 60-pound steel, 20 feet long, were welded to a plate ⅞-inch thick, 16 inches wide and the same length as the beams to form the bottom section known as the mud sill. To the top of this mud sill three I-beams, 10 feet long, were bolted crosswise, and two upright beams or jackposts were in turn bolted to it. Braces of 8 x 8-inch H-beams were fastened to the sill with shoe clamps and braced against the jackposts at the other end. Fitted to the top of the jackposts were two I-beams, 26 feet long, separated the width of a derrick leg. These are known as headboards. The equipment as thus assembled stands 7 feet high.

When the foundation is installed at the rig the top beams or headboards fit around the derrick leg and are bolted to it. The engine is installed by bolting the engine foundation underneath the top flange of the engine sill, this eliminates the danger of bolts pulling out and causing the engine to shift on the block, a common trouble with wooden foundations. The jackposts fit under and through the headboards, and the column or beam braces are fastened to the foundation sill by means of an adjustable clamp, V-shape, with protruding teeth at the point of contact with the sill. When clamp bolts are tightened the clamp automatically locks to the engine sill, making a vibrationless support.



*Installing steel engine foundation at oil well. Top beams or headboards are bolted to derrick legs, making a strong base for drilling operations*

## Study Lake Superior Iron Ore Beneficiating Methods

Clyde E. Williams, assistant director, and Byron Bird, concentration engineer of Battelle Memorial institute, Columbus, O., have completed a trip through the iron ore mines of the Lake Superior district and the copper mining district of northern Michigan. They visited the Michigan School of Mines and Technology at Houghton, Mich., the Minnesota mines experiment station at the University of Minnesota, the station of the bureau of mines at Minneapolis, Minn., and the research laboratories of the leading mining companies. The trip was made in connection with a project at the institute devoted to the study of the beneficiation of iron ore.

## Gas-Welded Stellite Strip Lengthens Truck Life

An ingenious application of gas welding recently has been made in connection with the manufacture of welded steel hand trucks which are subject to abrasion of the steel plate which forms the nose of the truck. To resist this abrasion a band of stellite about ¾-inch wide is applied along the entire length of the front edge of the steel plate nose. The stellite is applied to a thickness of about 1/32 inch, in this particular case by means of an oxyacetylene blowpipe.

## New York Show To Feature Power in Industry

Power, one of the principal requirements of industry, will be the theme of the Ninth National Exposition of Power and Mechanical Engineering to be held Dec. 1 to 6, in Grand Central Palace, New York. I. E. Moultrop, chairman, has announced that over 400 exhibitors have already applied for space. The exhibits are expected to show the latest developments in the most effective and economical methods of producing, increasing and applying power to the present-day requirements of all types of industrial consumers.

# Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

## USES:

### Metalizing the Airplane

*A discussion of materials, designs and methods in manufacturing airplanes of the all-metal type, by H. V. Thaden, in Aeronautical World Journal of Commerce, August* 1930, *p.* 31, 4 *pp.*

That the airplane of the future will be all-metal is conceded. Advantages of this type are longer life, weather proofness, fire resistance, greater strength and adaptability to mass production. It is not feasible simply to replace wooden parts with metal; component subassemblies must be metalized unit by unit, the redesign being based on fundamentals.

Three basic materials are available, namely, steel, aluminum and magnesium, the latter being used only to a small extent. Accepted applications in the utilization of these materials is outlined and design is discussed in a general way. Manufacturing complications are encountered because of the necessity for expensive equipment and the handicap of limited production.

—STEEL 9-4-30

### X-Ray Inspection

*Description of an instrument designed to give more rapid results in high-voltage x-ray spectrography and radiography, by Frederick Sillers Jr., in Transactions of the American Society for Steel Treating, August* 1930, *p.* 220, 15 *pp.*, 9 *illusts.*

The increasing application of the x-ray diffraction method to the study of materials of construction has led to the desire for a rapid method of obtaining results. Such a method may involve the adoption of higher voltages than are now generally employed. This article describes an instrument for use with voltages in the neighborhood of 200 kilovolts. With this instrument four x-ray spectrograms, of comparable intensities, may be obtained from coarse-grained material such as silicon electrical steel in less than 1 hour. By rotating the x-ray tube 90 degrees on its axis radiographs may be obtained in the customary manner.

Points discussed deal with strain in the steel, the use of intensifying screens, selection of optimum voltage and intensify vibration.

—STEEL 9-4-30

### Special Steel

*High tensile strength of corrosion-resistant steel reduces plate thickness and resultant weight of German bridge, in Engineering News Record, Aug.* 14, 1930, *p.* 253, 1 *pp.*, 2 *illusts.*

With a maximum unsupported central span of 377.29 feet, a 935-foot continuous deck-plate girder bridge now nearing completion over the River Elbe near Dresden, Germany, is of unusually light construction, due to the use of corrosion-resisting steel of high tensile strength. Besides the central span, the structure consists of two side spans 213.25 feet long and a single span with a length of 131.23 feet. It has a total width of 55.8 feet, including a 36-foot roadway and two sidewalks. The main framework consists of three plate girders spaced on 14.8-foot centers. The entire structure requires only 2600 metric tons of the special steel which has a tensile strength varying from 78,400 to 82,600 pounds per square inch.

—STEEL 9-4-30

## FABRICATION:

### Heat Balance

*A research setting up practical and theoretical heat balances for rotary forging furnaces, by Theodore F. Schilling, in Transactions of the American Society for Steel Treating, August* 1930, *p.* 235, 15 *pp.*, 3 *illusts.*, 11 *tables.*

The author has made an analysis and comparison of three sizes of rotary forging furnaces using four different fuels, namely, oil, artificial gas, natural gas and butane gas. A heat balance is calculated for each of the three sizes. The theoretical value determined for the 7-foot furnace is compared with actual data determined on such a furnace. A production rate curve is given, based on the actual versus theoretical fuel consumption. A short discussion is included on the selection and operation of rotary forging furnaces.

—STEEL 9-4-30

### Air Forge Hammers

*Desirability of compressed air for operating forging hammers discussed in Heat Treating and Forging, August* 1930, *p.* 985, 4 *pp.*, 5 *illusts.*

Miscellaneous information on various forge shops indicates the amount of air that is used and gives a cross section of shop practices. Advantages of air-operated hammers include: Saving in packing and calking materials, low consumption of lubricating oil, long service from cylinders and piston rods, low maintenance on hammers and air lines, flexibility, and the possibility of locating the power supply near the hammers.

—STEEL 9-4-30

### Erection Methods

*Planning and control permit erection of* 85 *stories of steel for Empire State building, New York, in six months, in Engineering News-Record, Aug.* 21, 1930, *p.* 280, 5 *pp.*, 9 *illusts.*

The placing of more than 57,000 tons of structural steel in an 85-story building between the months of April and October is the task which has confronted the steel erector on the Empire State building, New York. Eighty per cent of this total tonnage was in place on Aug. 1, when the building had reached to about the 50th story. During July, 22 stories of steel were placed in 22 working days, involving regular hours and no night work as progress has averaged about 10,000 tons of steel per month (working five days a week), it seems probable that the difficult schedule will be met. This article is devoted to an account of the steel erector's methods and equipment which are of interest and value both because of the magnitude of the project and the careful planning and control which has been exercised.

—STEEL 9-4-30

### Machinability of Metals

*Conclusions of a metallurgist who has conducted many careful tests in an endeavor to secure a basis for determining the machinability of various metals, by H. A. Schwartz, in Black and White, E. F. Houghton & Co., Philadelphia, September* 1930, *p.* 16, 4 *pp.*, 1 *table.*

While everyone appreciates what is

# NEW!

## 1. IMPROVED SIZING of POLISHING GRAIN (GMC Standards)

## 2. IMPROVED TREATMENT of POLISHING GRAIN

## 3. SIMPLIFIED SYMBOLS for GRAIN TREATMENTS

## EFFECTING GREATER GRAIN ECONOMIES

NORTON COMPANY has adopted an improved sizing of polishing grains which resulted from a research program sponsored by the General Motors Corporation. This new method of sizing produces a higher percentage of nominal size grain and less oversize. In laboratory experiments and actual production tests, wheels set up with the better sized grain have had longer life and have produced a better finish. Temporarily the new sizing will be designated as GMC Standard.

Further economies are made possible by the improved treatment of Norton grain. In setting up wheels, less grain is taken up by the glue, the life of the wheel is considerably prolonged, and consequently fewer setups are required.

Introduction of the new treatment makes it advisable to simplify the symbols as follows:

| *Old Symbols* | *New Symbols* |
|---|---|
| TJ Treatment | Alundum Abrasive A |
| HTJ and HC Treatment | Alundum Abrasive B |
| Improved Treatment | Alundum Abrasive C |

The new Alundum Abrasive "C," sized to the GMC Standard, is especially adapted for heavy duty metal polishing. Norton demonstrators will be pleased to study your requirements and, if necessary, to conduct tests to determine the proper grain to get the greatest results for you.

NORTON POLISHING ABRASIVES

NORTON COMPANY, WORCESTER, MASS.

meant by the term machinability, an attempt at rigid definition and measurement is likely to promote argument. Inasmuch as the limiting factor is tool failure, the question of machinability of metals is closely involved in tool design, form, material coolant, etc. So many variables are involved that generalizations as to machinability are practically imposible.

The author enumerates several of the variables which influence machinability, among these being tensile strength of the metal being machined, included hard and abrasive particles, general hardness, bending ability of chips, and coefficient of friction between chip and tool. Although hardness is the major factor, hardness tests do not give satisfactory indices to machinability.

The machining characteristics of various metals are taken up, and the the reasons for these characteristics are analyzed according to the metallurgist's knowledge of the internal structure and constituents of the metals. The effects of slag inclusion, and of treatments such as spheriodizing are discused. The energy required to remove one cubic inch of various metals, as experimentally determined, is tabulated, and the conclusion is reached that the permissible cutting speeds of similar metals are approximately inversely as the rate of penetration of a drill under load.

—STEEL 9-4-30

# PRODUCTION:

## Sheet Mill Equipment

*Improvements in pack and pair furnaces and methods of rolling surveyed by Edward S. Lawrence, in Blast Furnace and Steel Plant, August,* 1930, *p.* 1301, 2 *pp.*, 2 *illusts.*

Continuous bar heating furnaces of the Brooke type, pack heating furnaces of the McArthur and continuous pair and pack heating furnaces of the Manker type are explained by the author in detail.

—STEEL 9-4-30

## Heat Saving

*Concluding instalment of two articles dealing with methods of saving heat in industrial operations, by Fred M. Reiter in Industrial Gas, August* 1930, *p.* 11, 3 *pp.*, 4 *illusts.*

Continuing the classification of general methods of saving heat, the author describes the reduction of sensible heat in waste gases in continuous furnaces, double-chamber furnaces, chemical processes and steam boilers. Further economy has been obtained by the heat exchange by materials processed, that is, passing cold incoming work alongside hot outgoing finished material. This is known as the counterflow movement and it is embodied in many types of industrial furnaces. Charts are presented showing temperature characteristics of heat exchange in single flow, parallel flow and counterflow arrangements.

Operating conditions, involving the careful timing of heat treating operations, the use of automatic temperature and air-gas ratio controls, and the use of a refined fuel; and construction features demanding the use of high-grade materials, good insulation, and correct furnace design and firing methods, are other points to be watched if the most economical use is to be made of available heat.

—STEEL 9-4-30

## Coke Oven By-Products

*Methods of producing gas, tar, coke and light oils and the various reactions and their values discussed by T. J. Ess, in Blast Furnace and Steel Plant, August,* 1930, *p.* 1287, 5¾ *pp.*, 8 *illusts.*, 4 *tables.*

Heat supplied to ovens represents approximately 8 to 10 per cent of the heat of the coal charged. Products of the coke process per ton of coal charged to the ovens will vary somewhat with the type of coal used but will average about 60 per cent furnace coke yield, 10 per cent domestic coke yield, 5 per cent coke breeze, 25 pounds ammonium sulphite, 10 to 12 gallons tar, 3 to 4 gallons light oil, 10,000 cubic feet gas and 6000 to 6300 cubic feet of surplus gas.

—STEEL 9-4-30

## Steel Casting

*The most potent variable to be considered in the production of steel castings is the molding sand, by George Batty, in Transactions and Bulletin of the American Foundrymen's association, August* 1930, *p.* 309, 13 *pp.*, 2 *illusts.*

A study of light steel casting production has shown that, since about 95 per cent of the defects investigated resulted from some deficiency of the mold, molding sand must be considered the chief variable in production of these castings. The ideal grain shape of the sand is that of the sphere, and sands approximating this shape are available in adequate quantity. Fireclay used as bond may lead to trouble in reused sand through accumulation upon sand grains. It is suggested that fine-grained sand requires a longer milling time than a coarse-grained sand when the proportion of bond, by weight, is constant.

Permeability of backing sand should be at least equal to and preferably greater than that of the facing sand. Moisture content of the sand near the face of mold is rapidly vaporized when metal enters the mold, but soon is cooled and forms a dangerous condensate film, approximately parallel with the mold metal interface. Pinhole penetration and blows are likely to be more prevalent with an excessively moist sand than with a sand of correct moisture content, provided permeability conditions are equal. Air drying is advocated wherever possible.

—STEEL 9-4-30

# MISCELLANEOUS:

## Age Limits

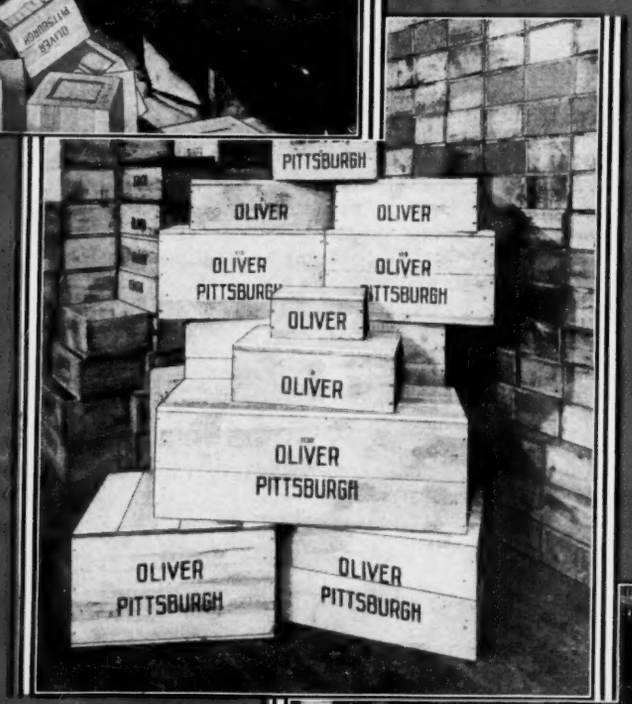
*The subject of age limits in industrial establishments discussed by Walter J. Lloyd, director of the bureau of employment, commonwealth of Pennsylvania, in Engineers and Engineering, July* 1930, *p.* 207, 1½ *pp.*

The author, who was himself compelled by circumstances to go to work at the age of 13, opens with the statement that within the last two years he has become convinced that age limits in industrial establishments in Pennsylvania and elsewhere are the cause of an artificial unemployment situation even in times of prosperity. This condition is aggravated by the displacement of workers by machines. He cites the case of a Pittsburgh steel company which, by the development of improved equipment, increased its production 40 per cent and at the same time was able to cut down its working force 65 per cent, incidentally throwing 1500 men out of work during a period of industrial prosperity.

His analysis of Pennsylvania unemployment statistics shows that most of the men out of work during normal times are between 42 and 53 years of age. This, he determines, is due largely to the general policy of not hiring men over 45 years of age. Industry, he says, is justified in this attitude by a desire for maximum years of useful service, by self defense against certain laws now in existence, and in protection of pension and retirement systems.

The author sees in better education of the average individual the solution to this problem. With an increasing demand for skilled workmen, every effort should be exerted to make it obvious to children that modern industry will offer them nothing after the age of 45 years, unless their education today lays a foundation upon which they can build later.

—STEEL 9-4-30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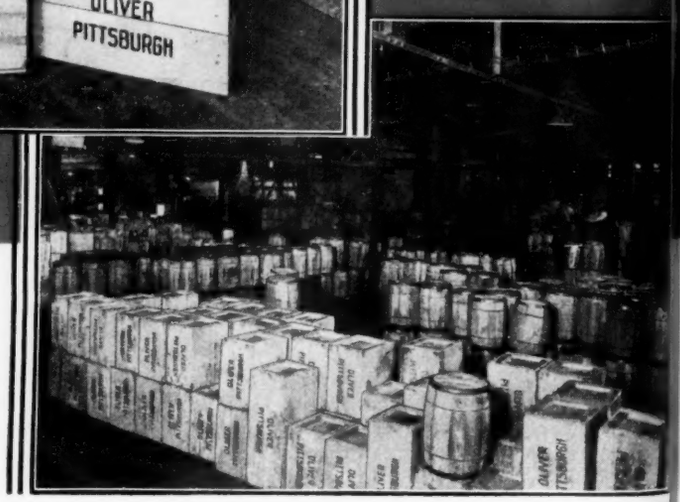


# THIS *familiar* MARK

THE synonym for dependability in bolts, nuts and rivets the world over—as indicative of quality as sterling is to users of fine silverware—backed by the pride of one of America's pioneer bolt and nut manufacturers.

Every detail in the manufacture of Oliver Bolts is one of the most exacting care even to the wrapping, packing and shipping. Every package or carton contains a full count—every box is tightly packed for proper shipment—every keg is filled to capacity. Even the labeling of each box or carton has been especially selected to assure maximum visibility in the darkest warehouse.

Such are the little details that make "Oliver Pittsburgh" stand for everything that's great in the world of bolts and nuts.

## Oliver Iron and Steel Corporation

PITTSBURGH, PA.

*Sales Offices:*

| | | | |
|---|---|---|---|
| New York | Kansas City | Dallas | Chicago |
| Cincinnati | Atlanta | | Philadelphia |
| St. Paul | Detroit | | Cleveland |

# Machine Tools and Plant Equipment

"Without machine tools modern machinery could not be built."

—Joseph W. Roe

## Museum Exhibit Will Demonstrate Development of Machinery

AN EVENT toward which machinery builders are looking forward with keen expectation is the special exhibit on the Machine Age which is scheduled for opening in New York about the middle of September. This exhibit will mark the reopening of the Museums of the Peaceful Arts in their new and larger quarters in the News building 220 East Forty-second street.

The purpose of the exhibit is to set forth clearly the steps in the development of machine tools, and other machinery of production, power and transportation, from the inception of such machinery down to the present day. As far as is possible this will be done by the use of actual machines, but when the machines themselves are unavailable or too large for exhibition, working models will be used. Pictures will also be used to supplement the machines and models.

**Machine Tools Will Be Shown**

In the case of machine tools, the Museums have been particularly fortunate in getting as gifts or as loans a considerable number of rare specimens of equipment marking important eras in the evolution of machine shop practice. For instance, they have a practically complete complement of actual machines typical of the important formative period in interchangeable manufacturing which came between the Mexican War and the Civil War (1846 to 1861). These machines will be set up in what may be described as a "period shop," with surroundings, accessories and workmen to complete the picture.

The special exhibit is being handled by Roberts Everett, who is thoroughly experienced in work of this kind, as his successful handling of the National Machine Tool Builders' Exhibits of 1927 and 1929 has amply testified. The affair will be in keeping with the ideals of the late Henry R. Towne, founder of the museum project, whose object was an international industrial museum to illustrate man's endeavors from earliest times to the present. This demonstration of the social effect of industrial progress promises to be an effective answer to sobbing idealists who bewail the passing of the "good old days" of handicraft production and artistic craftsmanship.

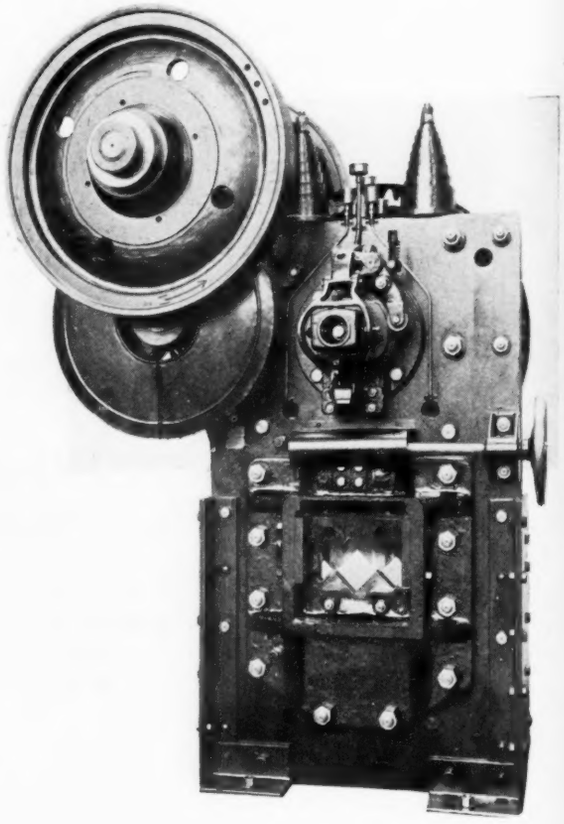
◆

## Bar and Billet Shears Are Built in Smaller Sizes

Henry Pels & Co., 90 West street, New York, has added to its line of bar and billet shears two new machines of comparatively small size. These new machines differ from each other only in size, therefore the accompanying illustration gives an idea of the appearance of either one.

The frames are of strong steel plates which are rigidly connected by means of numerous bolts which are machined to driving fits in their holes. Additional strength is provided around the shear throat by a heavy cast-steel frame. The lower knife rests on a cast-steel bridge which is supported on both frame plates, thereby dividing the pressure equally between them. This bridge adds greatly to the strength and rigidity of the frame. Gearing and flywheels are placed overhead to make the machine a compact unit. Twin flywheels are used and perfect balance and smooth operation is attained. The flywheel shaft runs in a long bearing having automatic ring oilers. All gears have cut teeth and bronze bushings are used throughout.

Operation is through a three-jaw clutch actuated by a hand lever. A



*This medium size bar and billet shear has a double frame of heavy steel plates reinforced around the shear throat by steel castings. Twin flywheels insure smooth operation and the overhead location of the mechanism makes the unit a compact one*

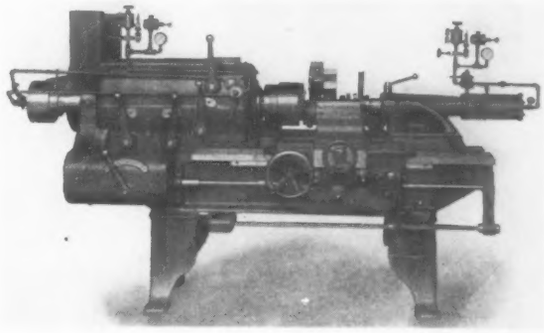
foot trip can be provided on request. This clutch disengages automatically upon completion of each stroke, or can be locked to give continuous operation. Backlash is prevented by a pin mechanism which positively locks the clutch with the shaft while the cutting is being done. This eliminates a common source of trouble, particularly when cutting extra hard material. A band brake is mounted on the end of the eccentric shaft and stops it automatically when the slide reaches its highest position.

The smaller of the two machines will cold shear steel of 65,000 pounds per square inch tensile strength up to 4-inch round, 3½-inch square, and 13 x 1⅜ or 8 x 1¾-inch flats. This machine requires 12 horsepower, is 71 inches long x 63 inches wide x 102 inches high, and weighs about 12,100 pounds. The larger machine will handle 4¼-inch rounds, 4-inch squares and 14 x 1½ or 9 x 1⅞-inch flats. Both machines operate at the rate of 22 strokes per minute.

◆

## New Lathe Effectively Uses Tungsten Carbide Tools

Monarch Machine Tool Co. Sidney, O., has announced a special 20x6-inch high-production lathe, shown in the accompanying illustration. The eight speed helical geared headstock is equipped with tapered roller bearings and is arranged for a single pulley drive, or direct motor drive.



*Heavy-duty lathe, with pneumatically operated chuck and tail stock spindle, has spindle speed and tooling rigidity demanded by tungsten carbide tools*

The lathe has a special 3-jaw air chuck and also makes use of an air cylinder for operating the tailstock spindle. In addition, this new unit has an anti-friction bearing cone tailstock center and a back arm facing attachment. The machine illustrated carries three tungsten carbide turning tools in the front tool rest and one in the rear facing rest, being tooled up to machine a cylinder sleeve of 4⅜ inches outside diameter x 9½-inches long. These sleeves are machined at the rate of 300 surface cutting feet per minute, at 240 revolutions per minute of the spindle and 0.040 inch feed per revolution, the time required to turn each piece being 15 seconds.

◆

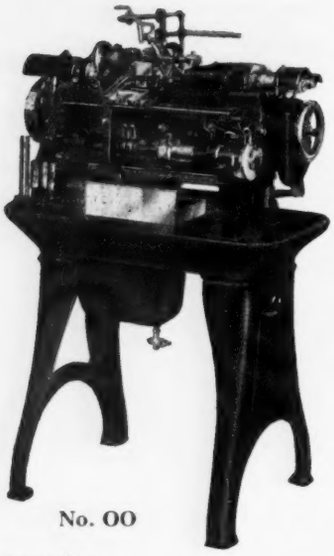
## New Compression Riveters Do Undistorted Work

Hanna Engineering Works, 1765 Elston avenue, Chicago, has just brought out a new line of compression riveters designed especially to meet the requirements of manufacturers of differential case and crown gear assemblies used in automotive manufacturing. An important feature of these new machines, an illustration of one of which appears herewith, is that they are arranged to drive two diametrically opposite rivets at the same time thereby insuring symmetrical clamping of the parts.

While the mechanism is practically the same in all the machines, three different arrangements of it are furnished. In one case the dies are horizontal, the work being supported by a stud carried on an arm provided with adjustable stops by which the work is correctly positioned with respect to the dies when the arm is swung over to this limiting point. This arm provides convenient means for assembling the component parts and supports them while the rivets are being struck.

In the second case, the dies are vertical, the work being supported upon a central pivot midway between the two dies. In this machine a subpress construction insures perfect alignment of the dies despite the deflection in the riveter frame which is inevitable with the heavy pressures employed in compression riveting. In the third case, the machine is adapted to a wider range of work by the provision of adjustments enabling the dies to be shifted over a considerable range of distances between rivets. The illustration shows the last mentioned type of machine.

*A symmetrical clamping of parts is assured by diametrically opposed dies of this pneumatically operated pressure riveter, which is one of a new line specially developed to meet the demands in automotive plants on the assembly of crown gear and differential case units*



No. OO

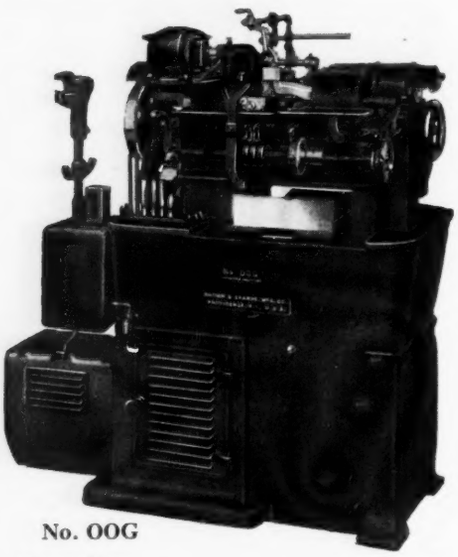
*Capacity:*
*Hole through regular feeding finger, 5/16". 3/8" Feed tube can be furnished as an extra.*
*A spindle, for light work, with 7/16" capacity can be furnished, if desired, at a nominal additional cost.*

# *Unusual Flexibility...*

## *For Brass and Steel*

## 20 Work Spindle . . . 20 Die Spindle . . . 30 Threading Speeds . . .

### Give Greater Production Possibilities on Brown & Sharpe Nos. OO & OOG High Speed Automatic Screw Threading Machines



No. OOG

*Capacity:*
*Hole through regular feeding finger, 5/16". 3/8" Feed tube can be furnished as an extra.*
*A spindle, for light work, with 7/16" capacity can be furnished, if desired, at a nominal additional cost.*

For the manufacturer who is producing large quantities of threaded parts from the free cutting materials, including steel—where all the tool positions of the Automatic Screw Machine are not required—the Automatic Screw Threading Machine offers unusual production features. The new range of speeds for both work and die spindle (20 each) giving 30 threading speeds, adapts these machines to the production of a wide variety of screws and other threaded parts.

Due to the different ratios of speed between the die and work spindles, maximum efficiency in speeds for forming and cutting-off together with a suitable threading speed can be obtained.

Exceptionally accurate length of thread is secured through the automatic control of the die spindle, which is stopped as soon as the required length is threaded. The work is then backed out of the die by the continued rotation of the work spindle at work spindle speed and not at the speed at which the threading was done.

***Complete specifications will be sent upon request.***

# BROWN & SHARPE

BROWN & SHARPE MFG. CO. PROVIDENCE, R. I., U. S. A.

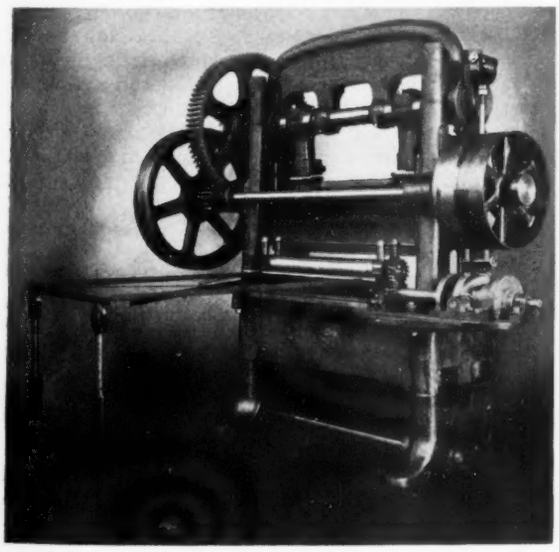
The machines are powered by compressed air cylinders of generous dimensions which actuate the dies through a system of levers and toggle joints. The compressed air is controlled either by foot operated valves or by valves operated by hand levers, depending upon the type of machine.

The manufacturer points out that among the advantages of these riveters is the uniformity of the riveting pressure irrespective of variations in the thickness of the parts being joined, which produces uniform results in the work as well as eliminating damage to the parts being riveted.

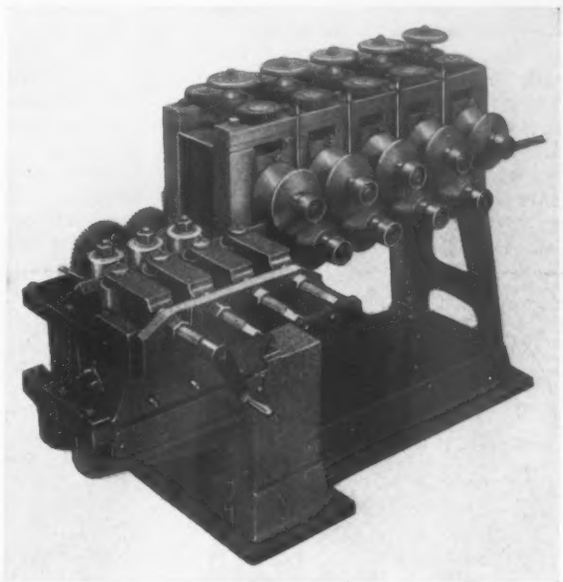
## Stagger-Feed Press Blanks Small Parts Rapidly

Zeh & Hahnemann Co., 182-200 Vanderpool St., Newark, N. J., announces a new design of press with stagger feed, which is specially designed for blanking small parts, such as transformer laminations, and other details required in large quantities. The illustration which accompanies this description shows the front view of the machine, including the feed table over which the sheet metal is drawn by the automatic roll feed.

The press itself is of the double crank variety and the automatic roll feed permits it to cut up a large sheet without slitting, thus saving time and also reducing the waste to a minimum. The feed works on the "pilgrim step" principle, the cycle being; forward, punch; rightward, punch, forward, punch; leftward, punch; etc. Five dies are used, the press makes 50 strokes per minute and it produces 250 blanks per minute.



*The "pilgrim step" principle of stagger feed is employed in this automatic roll feed press, which gives speed and economy in the blanking of small sheet metal parts*



*Small sections of various shapes can be straightened rapidly in this two-way roll straightening machine, which is a self-contained unit and therefore convenient to move about in a plant*

## Two-Way Straightener Is A Compact Unit

Sutton Engineering Co., Park building, Pittsburgh, Pa., has introduced a new high-speed production machine for straightening small sections. The machine shown in the accompanying illustration will handle flats, squares, hexagons, octagons, angles, zees, tees, channels, I's and other shapes. An important feature in addition to its high production, is its portability. The motor is mounted on a base below the rolls, which makes the entire unit self-contained.

The machine measures 48 inches between the uprights and will take sheets 36 inches wide by 8 feet long. It is capable of exerting 50 tons pressure. The net weight of the machine is about 10,000 pounds.

The machine has four bottom rolls which are driven, and five top rolls which are keyed to shafts idling in large double bearings. The rolls are made from 40-50 carbon steel forgings and have a capacity for straightening sections weighing not over 2 pounds per foot at approximately 150 feet per minute. To achieve this maximum production, a 25-horsepower motor running at 600 revolutions per minute is recommended.

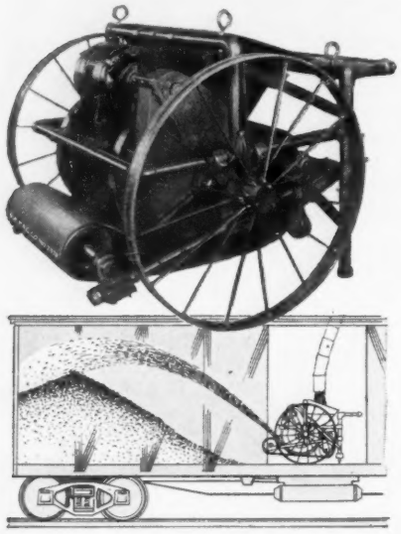
One set of rolls, grooved as desired, comes with the machine and additional sets of rolls can be furnished as extras. For polished materials hardened and ground rolls are furnished as extras. The machine comes equipped with motor pinion and motor base plate but without electrical equipment. The unit occupies a space of 6 x 6 feet and weighs approximately 5000 pounds.

## Box Car Loader Throws Bulk Material

Stephens-Adamson Mfg. Co., Aurora, Ill., has brought out a new electrically-driven heavy-duty box car loader which, instead of conveying such bulk materials as coal, ore, crushed stone, sand, etc., to the ends of a box car, makes an ingenious application of centrifugal force to throw the material. Although light enough to be maneuvered easily by one man, the loader has a capacity of 350 tons per hour. The accompanying illustration shows the machine and its application.

The loader incorporates a short endless belt 30 inches wide which is

driven at 2000 feet per minute. Its carrying surface is held concave by two disks which bear upon the belt only at its outer edges. A loading hopper feeds the material in between these disks, where it meets the belt traveling in a downward direction. As the load is carried around the curve, centrifugal force causes it to cling to the belt so that in a travel of less than 2 feet the material attains



*Box car loader which throws material; also a typical application*

the full belt speed. This causes it to be thrown to a distance of about 40 feet.

In loading cars, the machine is wheeled just inside the door, the motor is started, material fed to the hopper, and the stream is directed to the end to be filled first. No further attention is required except to swing the machine around to fill the opposite end. It is also used for spreading bulk cargoes in the holds of freight ships, in which case the machine is suspended below the wharf by means of the ship booms. Lumps as large as 6 inches can be handled and the angle of discharge can be regulated to pile to any height up to 9 feet. The angle can be regulated by a quick acting adjustment while the machine is in operation.

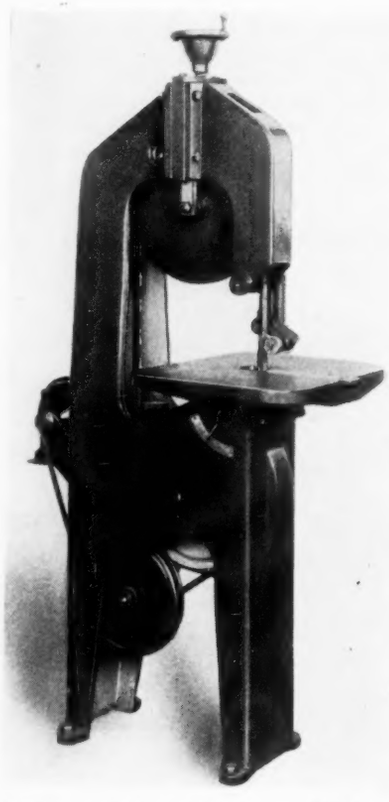
◆

## Filing Machine Operates on Bandsaw Principle

Grob Bros., Ninetieth and National avenue, West Allis, Wis., announce a new continuous-type filing machine which has the general appearance of a bandsaw, and which also has the same characteristic continuous action, thereby eliminating lost time. The machine is shown in the accompanying illustration. Cutting is done by a chain of short files welded to links of a chain, running over two sheaves. The work is placed on a 16 x 20-inch table through the center of which the chain of files passes downward. This table can be tilted in two directions through 22½ degrees. The table is released by loosening one nut, and is set by means of an indicator finger and graduated segment.

The drive is by V-belt from a motor mounted upon the back of the frame, to a countershaft, which in turn drives the lower sheave through a second belt. Three filing speeds are available, by means of the 3-step motor pulley; these speeds being 170, 195, and 220 feet per minute. The tension of the filing chain can be adjusted by a handwheel on top of the head, which raises and lowers the upper sheave. This sheave is cushioned by a heavy helical spring.

Flat, half round, or specially-formed filing chains can be used, and by releasing the tension and removing a pin the chain can be quickly removed through the back or bottom of the machine. Links can be replaced quickly by withdrawing two pins. When working, the links of the chain bear against a hardened steel back slide adjustable according to height of work. An adjustable slide in the table takes up the gap between chain and table when the table is tilted.



*Filing machine utilizes a chain of files cutting continuously*

The manufacturer recommends this machine as particularly useful in production of dies, special tools and other details requiring considerable filing. Internal work, such as the holes in blanking and trimming dies, can be handled easily because of the quick disconnecting and connecting features of the chain. The machine occupies floor space of 12 x 19 inches, stands 61 inches high, and weighs 400 pounds.

*All-steel lift truck can be used in cramped quarters*

◆

## New Multiple Lift Truck Handles Big Loads

Barrett-Cravens Co., 1328-1342 West Monroe street, Chicago, announces a new hand-operated multiple lift truck, the main features of which are a spring handle holdup which prevents the handle from falling, an automatic releasing latch which keeps the handle from flying up, tapered roller bearings on axles and king bolt and ball bearings in the lifting mechanism, long lifting leverage, adjustment of lift to suit load, and high lift to keep platform legs from dragging on steep inclines.

The truck shown in the accompanying illustration, is designed to permit operation of the lift mechanism at any point within an angle of 200 degrees, thereby making it usable in cramped quarters and narrow aisles. The mechanism is completely covered at the top, which protects it from harmful seepage from loads being carried. The hydraulic check, which is properly lo-

# Mass-production heat-treatment of small steel parts

## Slashed high handling costs » » Tripled production

## Greatly improved quality of work

GENERAL ELECTRIC has made a machine out of an electric heat-treating furnace—and here are the results in a typical installation at the Royal Typewriter plant, Hartford, Conn.

Four batch-type fuel furnaces were replaced by this one efficient electric machine. Two hundred lb. of cone screws, ball cups, rail inserts, and escapement and ratchet wheels pass through the automatic heat-treater every hour, on a nickel-alloy mesh-belt conveyor whose speed can be varied for a wide range of sizes and shapes.

Handling costs have dropped to bed-rock level; production has tripled; the quality of each piece is uniformly high; the temperature of the work is maintained to the instant of quench; the furnace is self-contained and is readily moved; maintenance is practically out of the picture.

Here is an exceptional opportunity to cut heat-treating costs. Ask the nearest G-E office to give you the complete story of the G-E mesh-belt conveyor furnace.

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

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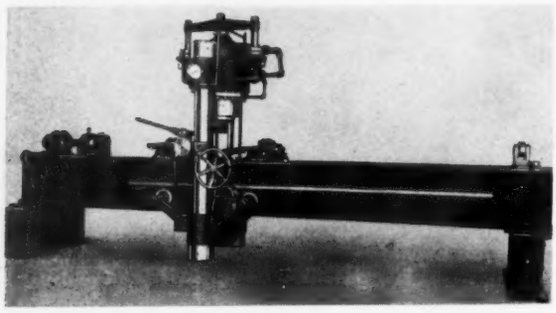
GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES



*Complete control by means of one conveniently located lever is a feature of this powerful hydraulic press for straightening shafts, axles, etc.*

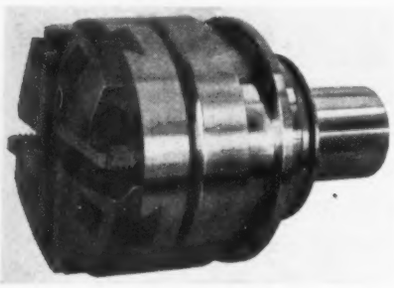
cated under the center of the load, is equipped with stuffing boxes which prevent leakage and resulting sudden descents of the load. Pressure greasing is used throughout.

The truck is all steel construction and is built to handle loads up to 6000 pounds.

◆

## Die with Tangent Chasers Cuts Threading Costs

Jones & Lamson Machine Co., Springfield, Vt., has brought out a new type of self-opening threading die equipped with tangent chasers. As the accompanying illustration indicates, these chasers have a great deal longer useful life than those of the ordinary variety. The tangent chasers consist of flat pieces of tool



*Opening threading die has precision ground tangent chasers*

steel, carrying on one face the thread profile ground to the correct helix angle for a given diameter and pitch of thread. The opposite face carries a dovetail which fits into the chaser holder. In the back of the dovetail ratchet teeth are cut, which engage with teeth in the end of a retaining plug in the chaser holder. This plug is secured in position by a set screw which serves to lock the chaser in position.

Inasmuch as the chasers are held tangent to the work, rather than radial, as is common practice, dull and worn portions on the ends of the chasers can be completely removed by grinding at a sacrifice of only a small fraction of the length of the chasers. Furthermore, as the grinding is done on the ends of the chasers and not on the chamfer, machine adjustments for the length of threads do not have to be made when the chasers are changed. A worn set works just as close to a shoulder as a new set.

The opening and closing action of the chasers is accomplished by radial movement of the chaser holders, which is controlled by a cam ring whose lugs are ground concentric and true with the face. This cam ring is supported in four places by four lugs on a locking ring which engage it directly behind the lugs which control the chaser holders. The locking ring is in turn supported by a collar and adjusting nut. The backward movement of an operating sleeve causes the locking ring to rotate slightly and release the cam ring which, being forced back by springs, opens the die, and the forward movement of the operating sleeve closes it.

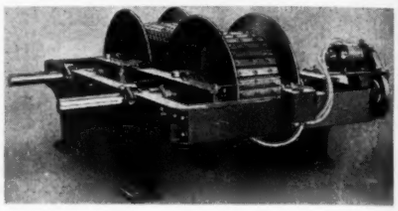
The builder points out that the higher first cost of this type of die is soon offset by the increased chaser life, and by the reduction of nonproductive time.

◆

## New Straightening Presses Use Hydraulic Power

The Hydraulic Press Mfg. Co., Mount Gilead, O., announces a complete new line of hydraulic presses for production service in straightening shafts, axles, bars, rods and other similar commercial shapes. The accompanying illustration shows one of these machines of the heavy-duty type. Precision manual control of the hydraulic mechanism is achieved through a single conveniently located hand-lever. When this lever is in mid position, the press is at rest; when it is moved forward from neutral the press ram will move forward. When the position of the lever is reversed, the press ram will return. Furthermore, the speed of motion of the press ram is proportional to the distance the operating lever is moved off neutral position in either direction. Thus, with the lever moved to its extreme forward position, the press ram will move downward at its maximum rate. The manual control operates through auxiliary hydraulic means.

Six standard sizes of these straightening presses are available, the first



*Electric controls broaden variable-speed transmission field*

four having pressure capacities of 75 100, 150 and 200 tons respectively. The last two, of which the illustration shows one, have pressure capacities of 300 and 400 tons.

◆

## Electrical Speed Controls Improve Transmissions

Reeves Pulley Co., Columbus, Ind., announces two new developments in connection with its variable-speed transmissions—one, an automatic electric speed control, the other an electric remote control. The accompanying illustration shows a transmission equipped with the automatic electric control. The two devices are quite similar, the main difference being that in the case of the remote control a conveniently located push-button control box with "fast" and "slow" pushbuttons takes the place of the automatic control box.

The automatic control allows the speed of the transmission, and thereby of the machinery driven by it, to be infinitely regulated automatically over a predetermined range. This is particular useful on rotary veneer lathes, stoker drives, paper waxing and water proofing machines, etc. It permits accurate synchronization of several machines or several elements of one machine, so that material can be fed continuously from one process station to another, thereby minimizing handling and operators' supervision.

The remote control puts production regulation literally at the operator's finger tips by means of the pushbutton switch, which can be placed anywhere to suit the operator's convenience.

# Pig Iron Decline Is at Slower Rate

## August Sees Smaller Drop than July —Steel Operating Rate Steady— Structural Total Again High—Scrap Strength Holds on Continued Buying

INTERPOSITION of a two to three-day holiday has confused the situation in steel and iron production and selling and the Labor Day week-end makes accurate estimate of the situation difficult.

Sentiment has gained more than actual tonnage and an attitude of waiting has been apparent, general belief being that once past Labor Day an advance would be started in more positive form.

Operations appear to remain unchanged at about 66 per cent for the Steel corporation and 50 to 51 per cent for independents. This figure may be changed as the week advances and the situation clears after the holiday.

August production of pig iron at 2,529,148 tons represents a drop of 4.14 per cent from the 2,638,441 tons of July and is the lowest since October, 1924. The daily average rate also fell 4.14 per cent from that of July, August daily average being 81,585 and that of July 85,110 tons. The total production for eight months to Sept. 1 is 23,472,203 tons, compared with 29,186,246 tons for the same period of 1929. A net loss of seven blast furnace stacks was made during the month, ten being blown out and three blown in. The rate of operation for August was 57.8 per cent, compared with 60.3 for July and 86.4 in August, 1929. The number of stacks in operation is the lowest since January, 1922. The rate of contraction of production narrowed from that of July, indicating approach to the bottom.

Structural needs continue to afford strong support and with 46,000 tons exceeds the previous week's total, while not reaching that of two weeks ago. A hydroelectric development in Canada takes 7400 tons, a subway terminal at St. Louis 6600 tons, a Ford assembly plant at Buffalo 4325 tons and a grade elimination in Michigan 3800 tons.

Placing of an order for $250,000 worth of automatic chucking machines with the Bullard Co. for the River Rouge plant of the Ford Motor Co. constitutes what probably is the largest machine tool order of the year. The number of units is not disclosed.

Sheets have weakened and in some instances $2 per ton less has been done on some grades, while other producers have held firmly to the former quotation. Some of this weakness is attributable to the long wait for automotive buying to appear. In absence of this activity sheets have difficulty in maintaining position.

Shipments of tin plate have not maintained the spectacular figures of a week ago but continue heavier than usual as canmakers meet demands of vegetable packers.

While the pack of vegetables promises to show little effect from the drought other effects are seen in demand for steel and iron and agricultural regions are not taking as much tonnage as usual. Spring terms have been announced on wire fencing and this is expected to bring somewhat larger tonnages from this source.

Steel and iron scrap has not lost the advantage gained a fortnight ago at Pittsburgh when a tonnage purchase caused an advance, followed by stronger conditions generally. The tonnage covered at Pittsburgh is suposed to be close to 25,000 tons. Scarcity of the highest grade and frequent rejections tend to cause higher bids by dealers covering contracts.

Car buying offers no help to the steel market, but the Pennsylvania railroad has asked bids on 26,000 steel car wheels, requiring 7540 tons of steel.

An indication of the recession in production is seen in the figures for iron ore shipments for August, 23.6 per cent below those for August, 1929, while the season to Sept. 1 is 25.4 per cent below 1929 to that date. These figures indicate total season shipments of 50,000,000 tons, compared with 66,000,000 in 1929.

STEEL'S composite of iron and steel prices declined 10 cents this week, due to lowering of a grade of pig iron and weakening in steel sheets. This brings it to $32.78, compared with $32.99 a month ago.

### Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

| | |
|---|---|
| **This week (Sept. 3, 1930)** | **$32.78** |
| **Last Week (Aug. 27, 1930)** | **32.88** |
| **One month ago (August, 1930)** | **32.99** |
| **Three months ago (June, 1930)** | **33.53** |
| **One year ago (Sept. 1929)** | **36.50** |
| **Ten years ago (Sept. 1920)** | **69.28** |

# Comparative Prices of Iron, Steel and Coke

**Representative Market Figures for This Week, Last Month, Three Months and One Year Ago**

| | Sept. 3, 1930 | Aug. 1930 | June 1930 | Sept. 1929 |
|---|---|---|---|---|
| **PIG IRON** | | | | |
| Bessemer, del. Pittsburgh | $20.26 | 20.26 | 20.76 | 20.76 |
| Basic, valley | 18.00 | 18.00 | 18.50 | 18.50 |
| Basic, eastern del. eastern Pa. | 18.25 | 18.00 | 18.75 | 19.85 |
| No. 2 foundry, del. Pittsburgh | 19.26 | 19.26 | 19.76 | 19.76 |
| No. 2 foundry, Chicago | 17.50 | 17.50 | 18.40 | 20.00 |
| *Southern No. 2, Birmingham | 14.00 | 14.00 | 14.00 | 14.00 |
| **No. 2X, Virginia Furnace | 18.25 | 18.25 | 18.25 | 20.00 |
| **No. 2X, Eastern del. Phila. | 19.76 | 19.76 | 20.26 | 22.26 |
| Malleable, valley | 18.50 | 18.50 | 19.00 | 19.00 |
| Malleable, Chicago | 17.50 | 17.50 | 18.40 | 20.00 |
| Lake Superior, charcoal, del. Chi. | 27.04 | 27.04 | 27.04 | 27.04 |
| Gray forge, del. Pittsburgh | 18.63 | 18.63 | 19.13 | 19.13 |
| Ferromanganese, del. Pittsburgh | 103.79 | 103.79 | 103.79 | 109.79 |

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

| | | | | |
|---|---|---|---|---|
| **COKE** | | | | |
| Connellsville furnace, ovens | 2.60 | 2.50 | 2.50 | 2.65 |
| Connellsville foundry, ovens | 3.50 | 3.50 | 3.50 | 3.75 |
| **SEMIFINISHED MATERIAL** | | | | |
| Sheet bars, open-hearth, Youngs. | 31.00 | 31.00 | 31.25 | 35.00 |
| *Sheet, bars, open-hearth, Pitts. | 31.00 | 31.00 | 31.25 | 35.00 |
| Billets, open-hearth, Pittsburgh | 31.00 | 31.00 | 31.25 | 35.00 |
| Wire rods, Pittsburgh | 36.00 | 36.00 | 36.00 | 42.00 |

| | Sept. 3, 1930 | Aug. 1930 | June 1930 | Sept. 1929 |
|---|---|---|---|---|
| **FINISHED MATERIAL** | | | | |
| Steel bars, Pittsburgh | 1.65 | 1.65 | 1.75 | 1.95 |
| Steel bars, Chicago | 1.75 | 1.75 | 1.85 | 2.05 |
| Steel bars, Philadelphia | 1.94 | 1.94 | 2.04 | 2.27 |
| Iron bars, Chicago | 1.75 | 1.80 | 1.90 | 2.05 |
| Shapes, Pittsburgh | 1.60 | 1.64 | 1.70 | 1.95 |
| Shapes, Philadelphia | 1.66½ | 1.67 | 1.77 | 2.06 |
| Shapes, Chicago | 1.75 | 1.75 | 1.80 | 2.05 |
| Tank plates, Pittsburgh | 1.60 | 1.64 | 1.70 | 1.95 |
| Tank plates, Philadelphia | 1.80½ | 1.81 | 1.91 | 2.15 |
| Tank plates, Chicago | 1.75 | 1.75 | 1.80 | 2.05 |
| Sheets, blue anl., No. 13, Pitts. | 2.05 | 2.15 | 2.15 | 2.85 |
| Sheets, black, No. 24, Pitts. | 2.35 | 2.47 | 2.55 | 2.35 |
| Sheets, gal., No. 24, Pittsburgh | 3.00 | 3.09 | 3.20 | 3.50 |
| Sheets, black, No. 24, Chicago | 2.60 | 2.60 | 2.70 | 3.10 |
| Sheets, blue anl., No. 13, Chicago | 2.30 | 2.30 | 2.30 | 2.50 |
| Sheets, galvanized, No. 24, Chi. | 3.20 | 3.20 | 3.30 | 3.75 |
| Plain wire, Pittsburgh | 2.30 | 2.30 | 2.30 | 2.45 |
| Wire nails, Pittsburgh | 2.05 | 2.05 | 2.15 | 2.50 |
| Tin plate, per base box, Pitts. | 5.25 | 5.25 | 5.25 | 5.35 |
| **SCRAP** | | | | |
| Heavy melting steel, Pitts. | 15.50 | 15.19 | 15.10 | 18.45 |
| Heavy melting steel, eastern Pa. | 12.50 | 12.50 | 13.25 | 16.38 |
| Heavy melting steel, Chicago | 12.00 | 12.00 | 12.05 | 15.05 |
| No. 1 wrought, eastern Pa. | 14.25 | 14.25 | 15.25 | 16.13 |
| No. 1 wrought, Chicago | 11.25 | 11.25 | 11.50 | 15.70 |
| Rails for rolling, Chicago | 14.50 | 14.50 | 14.55 | 17.60 |

# Sheets

**Market Shows Little Improvement — Automotive Requirements Light—Prices Steady**

SHEET PRICES, PAGE 77

**Pittsburgh**—The sheet market has failed to improve upon the slight gain noted in demand over the past two weeks. Orders are in fair number but forward buying still is lacking. Inquiry for future needs is fair but hesitancy is noted in closing. Automotive requirements remain as light as formerly with little improvement in prospect. Prices show no signs of stiffening with irregularities still noted in some grades. Black sheets have sold as low as 2.35c, with lower prices usually applied on material calling for several extras. The general market remains 2.45c. Galvanized continues 3.00c to 3.10c, with blue annealed plates 1.90c to 2.00c. Blue annealed sheets usually are 2.15c with some tonnage going at 2.05c. Metal furniture now is 3.60c to 3.70c. Mill operations hold around 50 per cent.

**New York**—Sheet prices continue easy with galvanized holding at 3.00c to 3.05c, Pittsburgh; black sheets at 2.40c to 2.45c, and blue annealed at 1.90c for plates and 2.05 for sheets. With the holiday yesterday trading over the past several days has been exceptionally light.

**Philadelphia**—A slightly stronger tone prevails in the market for blue annealed sheets. Some sellers who recently were meeting concessions of $2 a ton now are holding firmly to 2.00c, Pittsburgh, for plates and 2.15c for sheets. Galvanized sheets are more easily available at 3.00c, while black are holding at 2.40c to 2.45c. Trading is light.

**Cleveland**—Signs of improvement are appearing in the sheet market. Late last week five sheet mills shared in releases from the Fisher Body Co. In some cases, however, these were only about one-eighth normal size but will be followed by additional ones as soon as final sizes and shapes are decided upon. One company received 20,000 sheets whereas a normal release usually involves 150,000 or 160,000 sheets. Other lines are picking up gradually including electrical sheets, enameling stock, black sheets for barrel manufacture, galvanized for various uses, and blue annealed for different lines. Galvanized sales below 3.00c, Pittsburgh, are noted. Black sheets are 2.35c and full finished and metal furniture 3.50c and 3.60c, respectively.

**Chicago**—Sheet mill operations are irregular. The average continues at 65 to 70 per cent capacity. There is nothing to feature the market. No. 24 black sheets have been reported at 2.50c, mill, on desirable tonnages, but the usual price remains 2.55c, mill, and 2.60c, delivered Chicago. No. 24 galvanized sheets are 3.15c, mill, and blue annealed in Nos. 13 and 9-10 are 2.25c and 2.10c, mills, respectively.

**Cincinnati**—Orders for sheets continue small and for immediate shipment. Production schedules were little affected during the past week by the holiday.

**Buffalo**—The sheet market is spotty and while the tone seems a little bit better, no definite indication of increased business is apparent. Operations of local sheet mills remain at 50 to 60 per cent.

## Molybdenum Uses Reviewed

Molybdenum and its uses in the various phases of the steel industry as reported in the technical press and before technical societies is the dominant theme of the new booklet of the Climax Molybdenum Co., New York, entitled "Molybdenum in 1929." This booklet, the second of a series, presents abstracts from business papers and technical addresses which describe the use of the element in nitriding, corrosion resisting alloys and steels, gray iron and steel castings, aircraft, automobiles, and special applications. The abstracts are from British, German and French sources, as well as from the United States.

# Current Finished Steel Prices

**Prices in cents per pound unless otherwise stated**

## Steel Sheets

**SHEET MILL BLACK, NO. 24**

| | |
|---|---|
| Pittsburgh base | 2.35c to 2.45c |
| Detroit, delivered | 2.76½c to 2.81½c |
| Philadelphia, delivered | 2.69c to 2.74c |
| Gary, Indiana Harbor | 2.55c |
| Chicago, delivered | 2.60c |
| Birmingham, base | 2.60c to 2.65c |
| St. Louis, del. | 1.80½c |

**TIN MILL BLACK, NO. 28**

| | |
|---|---|
| Pittsburgh, base | 2.70c to 2.80c |
| Gary, base | 2.90c to 3.00c |

**GALVANIZED NO. 24**

| | |
|---|---|
| Pittsburgh, base | 3.00c to 3.10c |
| Philadelphia, delivered | 3.29c |
| Gary Indiana Harbor | 3.15c to 3.20c |
| Chicago, delivered | 3.20c to 3.25c |
| Birmingham base | 3.25c to 3.30c |
| St. Louis, del. | 3.45½c |

**BLUE ANNEALED SHEETS NO. 13**

| | |
|---|---|
| Pittsburgh, base | 2.05c to 2.15c |
| Chicago, district mills | 2.25c |
| Chicago, delivered | 2.30c |
| St. Louis, delivered | 2.50½c |
| Philadelphia, delivered | 2.34c to 2.44c |
| Birmingham | 2.30c |

**BLUE ANNEALED PLATES, NO. 9-10**

| | |
|---|---|
| Pittsburgh, base | 1.90c to 2.00c |
| Chicago, district mills | 2.10c |
| Chicago, delivered | 2.15c |
| Philadelphia, delivered | 2.19c to 2.29c |
| St. Louis, delivered | 2.35½c |
| Birmingham | 2.15c |

**AUTOMOBILE NO. 20**

| | |
|---|---|
| Pittsburgh, base | 3.60c |
| Detroit, delivered | 3.86½c |

**FURNITURE NO. 24**

| | |
|---|---|
| Pittsburgh | 3.60c to 3.70c |

## Tin and Terne Plate

**Prices per 100-pound box Pittsburgh**

| | |
|---|---|
| Tin plate, coke base | $5.25 |

Gary, Ind., base 10 cents higher.

Long ternes, 24, primes .... 3.45c to 3.55c

## Wire Products

**(To Jobbers-Merchant Trade)**

F.o.b. Pittsburgh, Cleveland base

(Per 100 pound keg)

| | |
|---|---|
| Standard wire nails | $2.05 and 2.15 |
| Cement coated nails | 2.05 and 2.15 |
| Galvanized nails | 4.05 and 4.15 |

(Per pound)

| | |
|---|---|
| Polished staples | 2.50c and 2.60c |
| Galvanized staples | 2.75c and 2.85c |
| Barbed wire, gal. | 2.70c and 2.80c |
| Annealed fence wire | 2.20c and 2.30c |
| Galvanized wire | 2.65c and 2.75c |

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

**(To Manufacturing Trade)**

| | |
|---|---|
| Plain wire, 6-9 gage | 2.30c |
| Spring wire | 3.30c |
| Wire, delivered Detroit | 2.53½c |
| Nails, delivered Detroit | $2.38½ |

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

## Rivets

| | |
|---|---|
| Struc. c.l., Pitts-Cleve. | 2.75c |
| Struc. c.l., Chicago | 2.85c |
| **7/16-inch and smaller, Pitts. | 70, 10 and 5 off |
| Chi., Cleve. | 70 to 70, 10 and 5 off |

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

## Steel Plates

| | |
|---|---|
| Pittsburgh, base | 1.60c to 1.65c |
| Philadelphia, del. | 1.80½c |
| New York, del. | 1.88c |
| Boston, del. | 2.05c |
| Chicago, base | 1.75c |
| Cleveland, delivered | 1.78½c to 1.88½c |
| Lackawanna, N. Y., base | 1.80c |
| Birmingham, base | 1.85c to 1.90c |
| Coatesville, Pa., base | 1.70c |
| Pacific Coast, c.i.f. | 2.15c to 2.25c |
| St. Louis, del. | 2.00½c |
| Detroit, del. | 1.91½c to 1.96½c |

## Structural Shapes

| | |
|---|---|
| Pittsburgh, base | 1.60c to 1.65c |
| Philadelphia, del. | 1.66½c to 1.70½c |
| New York, del. | 1.75½c to 1.85½c |
| Boston, del. | 1.88½c to 1.98½c |
| Chicago, base | 1.75c |
| Cleveland, delivered | 1.83½c to 1.88½c |
| Lackawanna, N. Y. | 1.80c |
| Birmingham, base | 1.85c to 1.90c |
| Pacific Coast, c.i.f. | 2.25c |
| Detroit, del. | 1.91½c to 1.96½c |

## Bars

**SOFT STEEL**

| | |
|---|---|
| Pitsburgh, base | 1.65c |
| Chicago, base | 1.75c |
| Birmingham, base | 1.85c to 1.90c |
| Lackawanna, N. Y., base | 1.85c |
| Pacific Coast, c.i.f. | 2.35c |
| Cleve. base, local mills | 1.70c to 1.75c |
| Philadelphia, del. | 1.94c |
| New York, delivered | 1.98c |
| Boston, delivered | 2.05c |
| Detroit, del. | 1.91½c |
| Pitsburgh, cold finish | 1.80c |
| Pittsburgh, forg. qual. | 1.90c |

**RAIL, STEEL**

| | |
|---|---|
| Chicago Heights | 1.65c |
| Eastern mills | 1.65c |

**IRON**

| | |
|---|---|
| Chicago, base | 1.75c to 1.85c |
| New York, delivered | 1.93c to 1.98c |
| Philadelphia, delivered | 1.94c to 1.99c |
| Pittsburgh, refined | 2.75c to 4.25c |

**REINFORCING**

| | |
|---|---|
| Pitts., billet cut lengths | 1.90c to 2.00c |
| Stock lengths, mill | 1.65c to 1.75c |
| Chi. billet, over 500 tons | 1.85c |
| 30 to 200 tons | 2.00c |
| Under 30 tons | 2.45c to 2.85c |
| Chi., rail steel, over 30 tons | 1.50c |
| Under 30 tons | 2.10c to 2.50c |
| Philadelphia, cut lengths | 2.04c to 2.09c |

## Cold-Finished Steel

| | |
|---|---|
| Bars, Pitts., Chi., Buff. | 2.10c |
| Cleveland | 2.00c to 2.10c |
| Do. delivered, Detroit | 2.20c |
| Shafting (turned, polished) | |
| Pitts., Buffalo | 2.10c |
| Do. (turn., ground) mill | 2.45c to 2.90c |

## Corrosion, Heat Resist. Alloys

**Base, Pittsburgh**

**18 per cent chrome, 8 per cent nickel**

Sheets 35c; plates 31c; bars 28c.

| | A | B | C | D |
|---|---|---|---|---|
| Bars | 19c | 20.5c | 23c | 28c |
| Plates | 22c | 23.5c | 26c | 31c |
| Sheets | 26c | 27.5c | 30c | 35c |
| Hot strip | 19c | 20.5c | 23c | 28c |
| Cold strip | 28c | 29.5c | 32c | 37c |

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

## Wrought Washers

| | |
|---|---|
| Carloads, Pitts. dist. | $6.50 to $6.75 off |
| Carloads, Chicago dist. | 6.70 to 6.80 off |

## Alloy Steel

**Hot Rolled—F.o.b. Mills**

**Alloy Quality Bar Base is 2.65c**

| S.A.E. | Alloy Diff. | S.A.E. | Alloy Diff. |
|---|---|---|---|
| 2000 | 0.25 | 1.25-1.75 Ni. | 1.05 |
| 2100 | 0.55 | 5100 .80-1.10 Cr. | 0.45 |
| 2300 | 1.50 | 5100 Chr. spring. | 0.20 |
| 2500 | 2.25 | 6100 Bars | 1.20 |
| 3100 | 0.55 | 6100 Spring | 0.95 |
| 3200 | 1.35 | Chr., Ni., Van. | 1.50 |
| 3300 | 3.80 | Carbon Van. | 0.95 |
| 3400 | 3.20 | 9250 (flats) | 0.25 |
| 4100 .25-.40 Mo. | 0.70 | 9250 (rds., sq.) | 0.50 |
| 4600 .20-.30 Mo. | | | |

## Strip, Hoops, Bands

| | |
|---|---|
| Hot strip, to 6-in., Pitts. | 1.75c |
| Hot strip 6 1/16 to 24-in., Pitts. | 1.65c |
| Hot strip, bands 6 in. and under, Chicago | 1.85c |
| Do. 6 1/16 to 25 in. | 1.75c |
| Cooperage hoop, Pitts. | 1.90c to 2.00c |
| Do. Chicago | 2.00c to 2.10c |
| Cold rolled strip., Pitts., Cleve., 3 tons, over | 2.35c to 2.45c |
| Worcester, 3 tons, over | 2.60c to 2.70c |

## Rails, Track Material

| | |
|---|---|
| Standard bess. and open hearth rails, mill | $43.00 |
| Relay rails, Pitts., 60 to 90 lb. | $24.00 to 28.00 |
| Light rails, 25-45, mills | $34.00 |
| Angle bars, Chi. base | 2.75c |
| Spikes, railroad, mills | 2.80c |
| Spikes, railroad, 7/16-in. and smaller, Pitts. | 2.80c |
| Spikes boat, barge, Pitts. | 3.00c |
| Spikes, railroad, Chi. | 2.80c |
| Track bolts, Pitts., steam roads | 3.80c |
| Do. standard, jobbers | 73 off list |
| Track bolts, Chicago | 3.80c |
| Tie plates, mills | $41.50 |

## Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930 lists.

**CARRIAGE BOLTS**

All sizes, cut thread ..... 73 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 off

**MACHINE BOLTS**

All sizes cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off

Tire bolts ..... 60, 10 and 10 off

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

**NUTS**

Semifinished ..... 73 off

***HEXAGON CAP SCREWS**

Milled ..... 80-10-5 off

Upset 1 in. diam. and smaller ..... 85-10 off

***SQUARE HEAD SET SCREWS**

Milled ..... 85-5 off

Upset 1 in. and smaller ..... 80-10-5 off

*Discounts dated Jan. 23, 1930.

## Cut Nails, Chain, Piling

| | |
|---|---|
| Cut nails, c.l., mills | 2.45c |
| Do, less carloads | 2.55c |
| Chain, BB, BBB, 9/16-1½ in. | 33 1/3 off |
| Sheet piling, Pitts. | 2.00c |

# Bars

**Slight Improvement Shown from Former Volume—Less Buying than Seasonal Rate**

BAR PRICES, PAGE 77

**Chicago**—Though there have been heavier specifications from the auto parts makers, the increase has been confined to a few instances and is not general. Road machinery makers are doing well. Tractor and implement manufacturers continue quiet, export business being practically their only outlet. Despite rumored pressure, prices continue at 1.75c, mill, on soft steel bars and bar iron at 1.75c to 1.85c, Chicago.

There has been an upturn in alloy bar taking, being a reflection of an upward trend first noticed a short time ago in Detroit. Takers of this grade are more numerous and several forge shops are increasing their orders.

**New York**—While there are reports of shading of $1 a ton on steel bars there does not appear to be a sufficient tonnage involved to warrant a spread under the prevailing 1.65c, Pittsburgh price. Trading is dull.

**Pittsburgh**—Bar demand shows a mild improvement compared with activity of several weeks ago, with cold bar finishers operating at an improved rate. Aggregate demand is seasonally light and caution is noted on the part of buyers in forward commitments. The market usually is 1.65c.

**Cleveland**—Activity in merchant steel bars is more pronounced, with heavier specifications by automotive customers. Orders are more numerous and for slightly larger individual amounts. Bars are quoted 1.65c to 1.70c, Pittsburgh, by outside mills, while local producers quote 1.65c, Cleveland, for outside shipment and 1.70c Cleveland, for local delivery.

## Spring Manufacturers Form Own Trade Association

Following three preliminary meetings in Toledo, Chicago and New York, representatives of 31 mechanical spring manufacturers met again in Toledo, Aug. 5, and organized the Spring Research bureau. The object of the organization is to establish cordial personal relations between manufacturers of mechanical springs; to promote good will between manufacturers and customers; to study cost accounting and costs of manufacture; to improve and develop commercial methods in manufacturing and marketing springs; to obtain and diffuse information on general trade matters, especially operation and sales; and to co-operate with government agencies and departments and other organizations in standardization and association work.

Malcolm Baird, 232 Delaware avenue, Buffalo, is acting as secretary of the organization.

## Effect of Radiant Energy on Steel Workers Is Tested

Tests conducted by the United States public health service Washington have determined that the intense sources of radiant energy to which steel workers are exposed have a pronounced effect on the skin temperatures of the men. The results of the research, reported in a pamphlet "Effect of Radiant Energy on the Skin of a Group of Steel Workers," by J. J. Bloomfield, assistant sanitary engineer, James E. Ives, physicist and Rollo H. Britten, associate statistician, all of the health service, indicate further that the forehead and cheeks showed the greatest increase in skin temperature.

The instruments used in the investigation are fully described. Great differences in the skin temperatures of different parts of the body, for a single individual, were found. Even under relatively cold atmospheric conditions, not far above the freezing point, high skin temperatures were encountered in workers exposed to radiant energy. For workers not exposed there was a definite relationship between atmospheric conditions and skin temperatures, both for arduous and for moderate work; the skin temperatures increasing with increase of effective temperature.

# Plates

**Bulk of Current Demand Comes from Pipe and Tank Makers—Market Is Fairly Active**

PLATE PRICES, PAGE 77

**Chicago**—Tonnages moving into pipe line work continue at the same high rate. A. O. Smith Corp., Milwaukee, operated its mills at the same high level during August as it did in July and advance information states that this rate will be continued in September. This means monthly commitment of about 65,000 tons. Tank builders are increasing. Inquiries from them have grown. One tankmaker has put on a night crew and his business is running better than last year. Weakness at Pittsburgh on a reported price to 1.60c there have not been reflected in this district, and the price is unchanged at 1.75c, mill.

**Philadelphia**—Plates are steady at 1.70c, Coatesville, with prospects for improved demand. Indications point to immediate placing of 305 freight cars by the Lehigh & New England, requiring several hundred tons of plates. Bids were to be opened in Washington Sept. 3 on an airplane carrier requiring 10,000 tons of steel, mainly plates. Bids were opened Sept. 2 on two to four Grace Line boats, although the award for steel is likely to be held up for some time pending arrangements for a federal loan. Pusey & Jones Co. Wilmington, Del., is expected to close soon for 1500 tons of plates for shipwork.

**Pittsburgh**—Plate tonnage shows no improvement, demand remaining steady from the lapwelded pipe producers, with barge works and miscellaneous buying fairly quiet. The market is 1.60c to 1.65c.

**Cleveland**—Most orders for plates reaching mills are sellers here are for small lots. From time to time 100 to 250-ton lots are received and occasionally a larger amount. Various consuming lines are represented, including tank, boiler, steam shovel and grab bucket manufacturers. Tank builders and other plate fabricators are enjoying a good inquiry and their estimating departments are working overtime. They expect these inquiries will develop into orders before many weeks have elapsed. The plate price is 1.60c to 1.65c, Pittsburgh.

## Contracts Placed

2100 tons, 13,700 feet, 54 and 66-inch welded pipe, department of water supply, Detroit, to United Welding Co., Middletown, O., through A. Phelps &

Son, Detroit, general contractors; ¼-inch plates, 122 inches wide and 173½ or 212 inches long to be furnished by American Rolling Mill Co.
100 tons, standpipe at Wareham, Mass., to a Pennsylvania fabricator.

## Sheet and Tin Plate Mill Wage Rates Reduced

Wages of workers in independent sheet and tin plate mills having contracts with the Amalgamated Association of Iron, Steel & Tin Workers will be reduced 4½ per cent, down to 18 per cent above base, for September and October. The average sales price of Nos. 26, 27 and 28 gage black sheets in July and August was 2.75c per pound, according to the report by mill and amalgamated association representatitves. Following is a comparison of price averages:

| | | |
|---|---|---|
| July-Aug. | 2.75c | —4.5 per cent |
| May-June | 2.90c | unchanged |
| March-April | 2.90c | —4.5 per cent |
| Jan.-Feb., 1930 | 3.05c | unchanged |
| Nov.-Dec. | 3.05c | unchanged |
| Sept.-Oct. | 3.05c | unchanged |
| July-Aug. | 3.05c | unchanged |
| March-April | 3.00c | unchanged |
| May-June | 3.65c | +1.5 per cent |
| Jan.-Feb., 1929 | 3.00c | unchanged |
| Nov.-Dec. | 3.00c | unchanged |
| Sept.-Oct. | 3.00c | unchanged |
| July-Aug. | 3.00c | unchanged |
| May-June | 3.00c | unchanged |
| March-April | 3.00c | unchanged |
| Jan.-Feb., 1928 | 3.00c | unchanged |

## Coefficient of Heat Transfer Remains Fairly Constant

Experiments, conducted by the North Central Experiment station of the bureau of mines in co-operation with the University of Minnesota, Minneapolis, has brought out that the co-efficient of heat transfer from a gas stream to beds of iron ore in a blast furnace changes a relatively small amount with changes in temperature. For this reason experiments conducted at low temperature can be applied to higher temperatures with only a small error. Since coke makes up about two-thirds of the volume of the solid material in a blast furnace, the acquisition of heat by the coke from the gas stream is particularly important.

Experiments have been made from room temperature to 300 degrees Cent. on the transfer of heat from a stream of gas flowing through beds of coke. For similar rates of flow and for comparable sizes, the co-efficient of heat transfer from the gas to the coke beds is about one-half as great as for beds of ore. This difference is partly attributed to smaller surface exposed to the flowing gas by the porous coke.

# Railroads

**Slim Replacements of Car Shop Depleted Backlogs — Eastern Roads Expected to Buy Rails**

TRACK MATERIAL PRICES, PAGE 77

**Chicago**—Car shops still have work ahead, although lack of railroad buying in recent months fails to provide much of a backlog. Mather Stock Car Co. will build 200 stock cars in its own shops. Little steel tonnage is pending for railroads. Track accessories and fastenings are slow and rail mill operations are the same as during the past six weeks. Increased coal mine activity is reflected in light rail purchases.

**New York**—Car buying and car inquiry remain light. Lehigh & New England is expected to close on 305 freight cars this week. A slight flurry in locomotive buying is noted.

**Philadelphia**—Pennsylvania railroad closes bids Sept. 5 on 26,000 steel car wheels, totaling 7540 tons of steel. Pennsylvania railroad also is expected out this month for rails. Last fall it inquired for 200,000 tons with an option on an additional 50 per cent. The trade doubts, however, that anything like this tonnage will be required this time. Reading and Southern roads are also expected in for rails shortly. Last fall the Reading closed on approximately 30,000 tons.

**Pittsburgh**—New inquiry for track material and other railroad equipment is absent. Light rails are in poor demand with purchases by coal companies restricted. Little improvement is shown in demand for relaying rails. The market on light rails usually is $34 although little tonnage is appearing to test this price. Quotations on fastenings are steady.

**Birmingham, Ala.**—Car orders have been completed at the Bessemer, Ala., shops of Pullman Car & Mfg. Corp. No replacements are in sight for the immediate future. However, builders look for additional inquiries.

### Car Orders Placed

Erie, two mail express cars, to American Car & Foundry Co., Chicago.
Illinois Steel Co., 10 ingot cars in addition to 10 placed last week, to American Car & Foundry Co., Chicago.
Mather Stock Car Co., 200 stock cars; work to be done in own shops.

### Locomotive Orders Placed

New York, New Haven & Hartford, six tenders, to American Locomotive Co., New York.
Northern Natal Navigation Co., South Africa, one 2-10-2 type locomotive, to Baldwin Locomotive Works, Philadelphia.
Pennsylvania, 12 electric locomotives, to own shops at Altoona, Pa.
Pickands, Mather & Co., Cleveland, one switching engine, to American Locomotive Co., New York.

### Car Orders Pending

Carnegie Steel Co., 30 gondolas, 20 flats and 18 special flat cars, all 70-ton capacity.
Tennessee Copper Co., 50 tank cars of 7000-gallon.

## Tin Plate Shipments in Good Seasonal Volume

Tin Plate Prices, Page 77

**Pittsburgh** — Tin plate shipments have moderated since a week ago when heavy demands were made by canmakers for additional tonnages. The movement still is in good seasonal volume, however, and the outlook is regarded as satisfactory. Specifications do not match shipments, considerable of the tonnage now moving having been rolled in anticipation of present demands. Mill operations are fairly steady, with the average around 70 per cent.

## Steel Employment and Payrolls Lower in July

Washington—Employment and payrolls in the iron and steel and all allied industries decreased in July as compared with June, according to the bureau of labor. Reports received from 202 iron and steel plants gave their June employment as 260,696, decreasing in July to 249,226, or 4.4 per cent. Their weekly payrolls dropped from $7,920,441 to $6,771,864, 14.5 per cent.

Reports from 39 cast iron pipe plants gave their June employment as 11,342, decreasing in July to 10,940, or 3.5 per cent. Their payrolls decreased from $264,461 to $246,170, .69 per cent. One hundred and seventy-six structural ironworks plants reported June employment as 30,164, dropping in July to 30,050, 0.4 per cent. Their weekly payrolls were reduced from $895,519 to $826,236, 7.7 per cent.

Reports from 150 machine tool plants gave their June employment as 32,806, decreasing in July to 30,112, 8.2 per cent. Their payrolls dropped from $948,299 to $811,497, 14.4 per cent.

# Structural Shapes

**Huge Bridge Building Program Materializing—37,900 Tons in Bridges Up in New Jersey and Kentucky—Awards, Inquiries, Many—6600-ton Station Let**

STRUCTURAL SHAPE PRICES, PAGE 77

**New York**—Third section, West Side elevated highway, Fifty-ninth to Seventy-seventh Street, on which New York Central has completed plans, will take approximately 28,000 tons of structural steel. Bids are expected in September. Section two, Twenty-second - Fifty-ninth street, on which New York City will figure steel, will be held up for hearings on Hudson river piers. Structural steel buying continues active. Bids are in on 5000 tons for apartments. Prices on fabricated and erected material are weak. Subway work, announced in STEEL last week, will be augmented by three sections due in October. Pennsylvania railroad opened bids on bridges for New Brunswick, N. J., but cancelled 700 tons for Weirton, W. Va.

**Chicago**—Shape tonnages move fairly well. Price weakness at Pittsburgh has in part unsettled the local market, although plain structural material is quotably unchanged, 1.75c, Chicago. McClintic-Marshall Co. took the 6600-ton terminal subway job at St. Louis. Inquiries are cut on several highway bridges through the West. Illinois will take bids Sept. 10 on 1500 tons for highway bridges.

**Boston**—American Bridge Co. was low on 2000 tons for Bucksport, Me., and this award was the largest of the week, 1005 tons additionl representing five jobs. A number of projects are being figured, including 1100 tons for three bridges. The largest is a state bridge at Richmond, Dresden, Me.

**Philadelphia** — Interest in the structural trade is centered in the opening of bids Sept. 5 on Market street subway section, 6000 tons of shapes, 2000 tons of concrete bars and approximately 900 tons of sheet piling. Meanwhile trading is light. Shapes are easy at 1.60c to 1.65c, eastern mill.

**Pittsburgh**—Shape inquiry is more active. Pending work is in fair volume. Awards involved few large lots. Specifications are at the steady rate of fabricating operations and show little change since a month ago. The market on plain material continues 1.60c to 1.65c.

**Cleveland**—Inquiries for building projects of various character are numerous. Owners and contractors apparently believing this to be the low point of the market are taking bids and are finding them to their advantage. The 3600-ton office building at Columbus, O., the 1600-ton art museum at Toledo, O., the 550-ton Cleveland Clinic building here are to reach closing stage soon, possibly this week. Other 200 to 300-ton inquiries are out locally as is a 600-ton freight terminal for New York Central. State highway construction work in New York, Kentucky and elsewhere reaches large proportions, in Kentucky for instance, 11 bridges are up taking 22,000 tons. A water plant for the Youngstown-Niles, O., district will take 800 tons. Shapes are 1.60c to 1.65c, Pittsburgh.

**Birmingham, Ala.** — Fabricating shops have taken on sufficient business, small tonnages predominating, to warrant steady operations. A few larger contracts have been awarded and some attractive tonnages are in sight. Bids are out on several jobs to be closed soon. Virginia Bridge & Iron Co. has a 500-ton bridge for a Tenessee highway. Ingalls Iron Works Co. reports good bookings for its Pittsburgh shop, recently purchased.

## Contracts Placed

7400 tons, $65,000,000 development project at Beauharnois, Que., for Beauharnois Power Corp. Ltd., 1117 St. Catharine street west, Montreal; 4800 tons to Dominion Bridge Co., Lachine, Que.; head gates and frames, 2600 tons, to Canadian Vickers, Ltd., Maisonne, Que.

6600 tons, electric railway terminal subway, St. Louis, to McClintic-Marshall Co., Chicago.

## Awards Compared

| | Tons |
|---|---|
| Awards this week ..... | 46,255 |
| Awards last week ..... | 35,610 |
| Awards two weeks ago .... | 50,511 |
| Awards this week in 1929 | 50,755 |
| Av. weekly awards, 1930.... | 36,016 |
| Av. weekly awards, 1929.... | 42,213 |
| Av. weekly awards, Aug..... | 40,884 |
| Tot. awards to date, 1929.. | 1,531,222 |
| Tot. awards to date, 9130.. | 1,296,563 |

4325 tons, assembly plant at Buffalo, Ford Motor Co., Detroit, to Whitehead & Kales Co., Detroit; Albert Kahn Inc., Detroit, architect.

3800 tons, Mill road grade separation, Michigan Central railroad, Dearborn, Mich., to American Bridge Co.

2300 tons, towers, London Terrace apartment, Ninth avenue and Twenty-third street, New York, to Levering & Garrigues Co., New York; Henry Mandel Co., builder.

2035 tons, bridges, Moosehead subdivision in Maine, Canadian Pacific railway, to Bethlehem Steel Co., Bethlehem, Pa.

2000 tons, bridge at Bucksport, Me., to American Bridge Co.

1500 tons, Twenty-seventh street building, Beaver and Hanover streets, New York, to Harris Structural Steel Co., New York; Fred T. Ley & Co., general contractors.

1200 tons, office building, Wall and Front streets, New York, to Post & McCord Inc., New York; Schroder & Koppel, general contractors.

1200 tons, plant, American Potash & Chemical Co., Trono, Calif., to Consolidated Steel Corp., Los Angeles. Octavia streets, San Francisco, to Golden Gate Iron Works, San Francisco.

1000 tons, bridge, Pacific Great Eastern railway, Lillooet, B. C., to Dominion Bridge Co., Vancouver, B. C.; noted last week as 100 tons or more.

1000 tons, pump houses, Texas-Chicago natural gas line, to Mississippi Valley Structural Steel Co., Decatur, Ill.

807 tons, bridges, New York Central railroad, Sixty-third street, New York, to McClintic-Marshall Co., Pittsburgh.

700 tons, postoffice at Richmond, Va., to Ingalls Iron Works Co., Pittsburgh.

640 tons, Sterling Hall of Medicine, New Haven, Conn., to Shoemaker Bridge Co., Pottstown, Pa.

600 tons, apartment, Cranberry street, Brooklyn, N. Y., to George A. Just Co., Long Island City, N. Y.

550 tons, nurse's home, Baltimore, to Dietrich Bros., Baltimore; North Eastern Construction Co., general contractor.

520 tons, intake screens, Washington, to Virginia Bridge & Iron Co., Roanoke, Va.

500 tons, bridge, Bucksport, Me., to American Bridge Co.

500 tons, bridge in Roane county, Tennessee, Tennessee Highway commission to Virginia Bridge & Iron Co., Roanoke, Va.

450 tons, building, Chicago Rapid Transit Co., Niles, Ill., to unstated fabricator.

410 tons, Hill school gymnasium, Pottsville, Pa.; 300 tons to McClintic-Marshall Co., Pittsburgh, and 110 tons, to Shoemaker Bridge Co., Pottstown, Pa.

400 tons, seven state bridges, Massachusetts, to unstated fabricator.

400 tons, Meharry Medical college, Nashville, Tenn., to Carolina Steel & Iron Co., Nashville; Angle-Blackford Co., Greensboro, N. C., general contractor.

370 tons, bridge between Peru and Mexico, Me., to Boston Bridge Works Inc., Boston.

360 tons, apartment hotel, Atlantic Beach, Long Island, N. Y., to Berkshire Structural Steel Co., Brooklyn, N. Y.; Murray Klein, Brooklyn, architect.

350 tons, building, General Electric Co., Fort Wayne, Ind., to the Austin Co., Cleveland.

326 tons, miscellaneous material, Carter Oil Co., Pittsburgh, to Jones &

Laughlin Steel Corp.
312 tons, factory, Midland, Pa., to McClintic-Marshall Co., Pittsburgh.
266 tons, St. Francis hospital, Grand Island, Nebr., to Paxton & Vierling Iron Works, Omaha, Nebr.
250 tons, junior high school, Hamtramck, Detroit, to Palmer-Bee Co., Detroit; Rozycki Bros., Detroit, general contractors.
250 tons, bus terminal, Jamaica, N. Y., to Kaminsky Iron Works.
230 tons, garage, State and Farrington streets, Flushing, N. Y., to J. Klein Iron Works, Brooklyn, N. Y.; William Flaherty, general contractor; listed last week as 100 tons.
230 tons, train shed, Portsmouth, O., to McClintic-Marshall Co., Pittsburgh.
200 tons, addition, Providence hospital, Detroit, to R. C. Mahon Co., Detroit; Christman-Burke Co., general contractor; Louis Kamper, architect.
200 tons, high school at Washington, to Ingalls Iron Works Co., Pittsburgh.
175 tons, department store, Twentieth and Broadway, Oakland, Calif., to Judson-Pacific Co., San Francisco.
175 tons, Sandstone bridge, West Virginia state highway department, to Wheeling Structural Steel Co., Wheeling, W. Va.
165 tons, theater, Wilmer & Vincent, Reading, Pa., to Bethlehem Fabricators Inc., Bethlehem, Pa.
160 tons, bridges, Grand Trunk railroad, Okemos, Mich., to McClintic-Marshall Co., Pittsburgh.
126 tons, Tresham school, Chicago, to Wendnagel & Co.
125 tons, boiler house, Waterville, Md., to New England Structural Co., Boston.
112 tons, warehouse, Crucible Steel Co. of America, Detroit, to Mahon Structural Steel Co., Detroit.
110 tons, Quincy, cold storage warehouse, Boston, to unstated fabricator.
110 tons, 6-story apartment, Van DeVenter avenue and Sixth street, Astoria, N. Y.; to J. Klein Iron Works, Brooklyn, N. Y.; Academy Development Co., builder.
110 tons, bridge, Boston & Maine railroad, to Boston Bridge Works, Boston.
106 tons, Lee street bridge, Baltimore, to Bethlehem Steel Co., Bethlehem, Pa.
100 tons, high school, Salisbury, Md., to Dietrich Bros., Baltimore, Cogswell Construction Co., Baltimore, general contractor.
100 tons, building, Bloomfield, N. J., to Hudson Structural Iron Works, Jersey City, N. J.
100 tons, apartment, North Beverly road, Brooklyn, N. Y., to Hinsdale Iron Works, Brooklyn.
100 tons, apartment, Fourth avenue and Seventy-fifth street, Brooklyn, N. Y., to Acme Iron Works, Brooklyn.
100 tons, tower, Duquesne Light Co., Pittsburgh, to Guibert Steel Co.
100 tons, church, Ellwood City, Pa., to Guibert Steel Co.
100 tons, bakery, Baltimore, to Dietrich Bros., Baltimore.
100 tons, highway bridges, Virginia, to American Bridge Co.

## Contracts Pending

22,000 tons, 11 Kentucky state highway bridges; bids in.
19,000 tons, New England building, Boston; general contract to H. K. Ferguson Co.
15,900 tons, bridges over Passaic and Hackensack rivers, New Jersey state highway department, route 25. Bids Sept. 15.
4000 tons, Mutual Home bank building, Dayton, O.
3600 tons, state office building, Columbus, O.; bids tabulated.
3300 tons, cantilever bridges, over Kanawha river, West Virginia state highway department.
3000 tons, school building, Barry avenue and Melvina street, Chicago.
2405 tons, apartments, Ninety-third street and Central Park west, New York.
2000 tons, Professional Arts building, Boston; general contract to H. K. Ferguson Co., Cleveland.
2000 tons, bridges and Staten Island grade crossing, Baltimore & Ohio railroad.
1744 tons, New Jersey approach, Hudson river bridge, New York.
1550 tons, Illinois highway bridge, letting at Springfield, Ill., Sept. 10.
1500 tons, highway bridges for state of Illinois; bids Sept. 10.
1150 tons, mill building, West Virginia Rail Co., Huntington, W. Va.
1000 tons, swing span and truss span, Louisville & Nashville railroad, Louisville, Ky.
1000 tons, transmission towers, Ohio Edison Co., Akron, O.; bids tabulated.
1000 tons, warehouse, Autocar Sales Co., Philadelphia.
845 tons, Coplay-Northampton bridge, Lehigh county, Massachusetts.
800 tons, water purification plant, Mahoning valley system, Youngstown and Niles, O.
800 tons, Y. M. C. A. building, Dallas, Tex.
800 tons, loft, Thirtieth street and Seventh avenue, New York.
700 tons, bridge, Crow Creek, Wyo., for Union Pacific railroad.
700 to 800 tons ,estimated for cattle storage building, Pennsylvania railroad, Philadelphia.
700 tons, Camden, N. J. Athletic club; specifications revived.
650 tons, fertilizer plant, Darling & Co., East St. Louis, Ill. 250 tons, Wilson auditorium, Cincinnati.
635 tons, state bridge, Richmond, Dresden, Me.
930 tons, New York state bridges; letting Sept. 4.
600 tons, five bridges, Davess county, Missouri.
600 tons, freight terminal, New York

(*Concluded on Page* 85)

# Concrete Bars

**Quebec Project Let, 4000 Tons — Inquiries Active— Awards Fair—Road Work and Subways Loom Importantly — Price Weakness Still Manifest Around 1.65c**

REINFORCING BAR PRICES, PAGE 77

**New York**—Efforts to firm up concrete reinforcing bar prices meet with little success. Quotations on attractive tonnages are still mixed. On small lots prices are steadier, but the market has been sinking on large projects. Small-lot volume continues moderately active. Close to 3000 tons pend for New York and New Jersey roadwork and city subways. Mesh is reported slightly more active in some quarters.

**Boston**—Small concrete bar awards last week totaled about 300 tons. Bars for the biological laboratory at Harvard university, 650 tons, will be purchased soon. Prices are weak on large lots owing to keen competition. Small lots are firmer.

**Pittsburgh**—August concrete bar production totaled close to that of July and was in fair seasonal volume. Activity in the market has been slower recently and some hesitancy is noted to close on certain projects. Awards remain light in this district and new inquiry usually calls for small lots. Bar prices continue 1.90c to 2.00c for cut lengths and 1.65c to 1.75c for stock lengths.

**Cleveland**—Concrete bar projects are becoming more numerous, and several are taking definite form in inquiries for tonnage. Foundations, 125 tons for the stadium here, went to Republic Structural Iron Works. The next two structures to come up here are the Higbee Co. department store, 310 tons, and an office building at East Ninth street and Chester avenue, 225 tons. New York Central's freight handling building at East Fortieth street, will take but 35 or 50 tons. Bars are 1.65c, Cleveland or Pittsburgh.

**Chicago**—Further improvement is shown in reinforcing bar inquiry. Heavy bridge and county paving work is supplemented by a mill increase in apartment house projects. Rail steel bars for bridge and road

(*Continued on Page* 85)

## Awards Compared

| | Tons |
|---|---|
| Awards this week | 6,663 |
| Awards last week | 11,055 |
| Awards two weeks ago | 7,312 |
| Awards this week in 1929 | 5,893 |
| Av. weekly awards, 1929 | 5,849 |
| Av. weekly awards, 1930 | 6,886 |
| Average weekly awards Aug. | 6,461 |
| Total awards to date, 1929 | 226,420 |
| Total awards to date, 1930 | 247,911 |

# Strip

**Steady Specifications but Little Increase—General Consumers Support Market**

STRIP PRICES, PAGE 77

**Pittsburgh** — Strip specifications hold at the quiet rate of the past six to eight weeks. Producers find little encouragement in the automotive situation, recent demand from that industry failing to show any appreciable improvement since a month ago. Cold-rolled strip tonnage has improved moderately during the past 30 days, most of the gain coming from miscellaneous consumers. Some future inquiry is appearing and although producers have not named fourth quarter prices it has been estimated that they would take tonnage on the basis of current quotations. The market usually is 1.75c and 1.65c for the two sizes of hot strip, and 2.35c to 2.45c for cold-rolled material. Mill operations are off slightly at 35 per cent for hot mills, with cold mills at 25 to 30 per cent.

**New York**—Strip prices are easier with wide hot-rolled holding at a flat price of 1.65c, Pittsburgh, and narrow at 1.75c. Cold-rolled strip is unchanged at 2.35c to 2.40c, Pittsburgh changed at 2.35c to 2.40c, Pittsburgh.

**Cleveland**—Tonnage in strip steel, particularly hot, shows some expansion. This is not yet up to expectations for late August and early September but is expected to improve rapidly as consumers reach heavier production. Chief encouragement is drawn from the fact various consuming lines in addition to automotive customers are represented in the buying. Individual orders are small but are growing more numerous. Stocks are low. Cold is 2.35c, Cleveland, though some still quote 2.45c. Wide hot is 1.65c, Pittsburgh, with narrow bringing 1.75c usually, and 1.70c quoted on attractive rollings.

**Chicago**—Cold strip price is unchanged. There has been some pressure on the 2.45c, Cleveland and Pittsburgh price. Volumes moving are at the recent pace. Hot strip continues to drag and prices are 1.90c, Chicago, on 6-inch and under and 1.80c, Chicago, on wide.

## Warehouse Sales Slow Over Holiday Week-End

Warehouse Prices, Page 99

**Boston**—Resulting from growing development of small jobs warehouses continue to find a better condition in shipments. These are largely in limited tonnages but aggregate quite substantially. On this class of buying prices remain at schedule rates.

**New York**—With Labor day past jobbers look for an early although not necessarily a sharp improvement in demand. Prices are unchanged.

**Philadelphia**—Warehouse trading is steady at the prevailing rate of the past few weeks. Prices are unchanged with the exception of cold-rolled strip which has been reduced to 4.85c, delivered locally.

**Pittsburgh** — Demand remains slow. Little improvement is shown for August over July. Orders are fair in number but tonnage is light. Prices are unchanged.

**Cincinnati** — Jobbers report volume during August will compare favorably with June and July, but a slight recession during the past week was attributed to holidays. Prices are unchanged.

**Buffalo**—Business during August was below that of July, the last week having shown considerable decline.

**Chicago**—Orders are evenly distributed among iron and steel products and as a rule are constant. Prices are unchanged.

## Operations by Districts Show No Revision

**Youngstown, O.**—Operations for the first week of September will average about 57 per cent. Of the 51 independent open-hearth furnaces 27 are in operation with bessemer output at 60 per cent. Corporation steel making is unchanged at 55 per cent. Of 120 independent sheet mills 55 will be in operation with all the mills starting Tuesday. Strip operations at a higher level than sheet mills and output will be about 65 per cent. Tin plate output is steady at about 70. Pipe mills continue excellent operations with output at about 75 per cent of capacity. Independent bar mills are operating at 55 and those of the Corporation at 60.

**Pittsburgh** — Steelmaking operations are irregular due to holiday interference. Ingot production is being resumed at the former rate at around 55 per cent. Sheet and tin mill operations are unchanged at 50 and 70 per cent, respectively. Strip schedules are lighter at 35, with pipe unchanged at 60 to 75.

**Cleveland** — Open-hearth production continues to drag with but nine of this district's 34 furnaces pouring and to rate at approximately 27 per cent of capacity. Otis Steel Co. has its open-hearth department down and one of its two blast furnaces idle.

**Chicago**—Steelworks are resuming at 55 per cent of capacity, following irregular rates over the holiday. sixteen of the district's 36 steelworks blast furnaces are active, the leading interest having 11 of its 27 stacks blowing.

**Birmingham, Ala.**—Thirteen open-hearth furnaces are in operation and operations are estimated at about 55 per cent of capacity. Structural shape finishing mills are low; sheet and plate mills are running more than 50 per cent.

## Cold Finish Inquiry Light Despite Producer Optimism

Cold Finished Prices, Page 77

**Pittsburgh** — Cold-finished steel bar demand has shown a moderate improvement over the past month and producers are more optimistic regarding the future. A small portion of the gain has come from automotive interests but there has also been an increase in requirements of miscellaneous consumers. One producer reports an increase of 10 per cent in August bookings over July. Future inquiry as yet is light and producers have made no announcement regarding fourth quarter prices. The market currently is 2.10c.

**Cleveland**—With little interest in contracting ahead for cold-finished bars, producers have to depend upon transient ouying of small lots for rush shipment, indicating low stocks. Recently a slight upturn in automotive demand has taken place. The 2.10c, Cleveland, price prevails.

## Westinghouse Memorial To Be Dedicated Oct. 6

The memorial to George Westinghouse, inventor and founder of the industries which bear his name, will be dedicated Oct. 6, it is announced by A. L. Humphrey, chairman, Westinghouse Memorial Trustees. Invitations are being sent to hundreds of leaders of industry, science, art and education. The ceremony will include unveiling and dedication of a bronze group or heroic proportions created by Daniel Chester French, American sculptor. Its location will be in Schenley park, Pittsburgh.

## Concrete Bars

(*Concluded from Page* 81)

work are 1.65c to 1.75c. The general contract on the University of Chicago building, 700 tons, will be let shortly.

**Birmingham, Ala.** — Reinforcing concrete bars are still selling in lots up to 100 tons. Shops, however, are doing well. Connors Steel Co. continues to fill dealers' orders and aggregate tonnage is large enough to keep its mill active. Road building is under way in several southern states and orders for necessary material are being placed from this district.

## Contracts Placed

4000 tons, $65,000,000 development project at Beauharnois, Que., for Beauharnois Power Corp. Ltd., 1117 St. Catherine street west, Montreal; divided among Peck Rolling Mills Ltd., Canadian Tube & Steel Products Ltd., and Canadian Steel Foundries Ltd., all of Montreal.

450 tons, Cadiz street subway connection, Dallas, Tex., 225 tons to Southern States Steel Corp., Dallas, and 225 tons to Sheffield Steel Corp., Kansas City, Mo.; T. H. Johnson, 522 North Texas building, Dallas, Contractor.

448 tons, highway subway, Henderson avenue, Fort Worth, Tex., for Texas & Pacific and St. Louis-San Francisco railroads to Texas Iron & Steel Co., Fort Worth; H. K. McCollum, contractors and engineers.

300 tons, apartment, 1260 Astor street, Chicago, to Concrete Engineering Co., Chicago.

175 tons, building, Boston, Radio Corp. of America, to Turner Construction Co.

150 tons, Hill school gymnasium, Pottsville, Pa., to McClintic-Marshall Co., Pittsburgh.

150 tons, road paving, Cook county, Illinois, to Concrete Engineering Co., Chicago.

125 tons, substation, Public Service Co. of Northern Illinois, Glencoe, Ill., to Calumet Steel Co., Chicago.

125 tons, foundations, civic stadium, Cleveland, to Republic Structural Iron Works.

120 tons, including several cars of mesh, telephone building, Newark, N. J., to Faitoute Iron & Steel Co., Newark; White Construction Co., general contractor. Listed in Aug. 28 issue as inquiry.

120 tons, nurse's home, Baltimore, to Joseph T. Ryerson & Son Inc.; North Eastern Construction Co., general contractor.

100 tons, 3-story warehouse, 80 x 112 feet, Stamford Gas & Electric Co., Stamford, Conn., to Jones & Laughlin Steel Corp., Pittsburgh; Turner Construction Co., general contractor.

100 tons, viaduct, New York Central railroad, Sixty-fifth street, New York, to Truscon Steel Co.; H. H. Sherwin Co., general contractor.

100 tons, bath houses and other structures, Jones Beach, Long Island, N. Y., to Carroll-McCreary & Co., Brooklyn; Eureka Fire Proofing Co., contractor.

100 tons, high school, Salisbury, Md., to Concrete Steel Co., New York; Cogswell Construction Co., Baltimore, general contractor.

100 tons, bridge, Bucksport, Me., to Concrete Steel Co.; Merritt-Chapman & Scott Corp., general contractor.

## Contracts Pending

700 tons, building, University of Chicago, Chicago; general contract to be let shortly.

600 tons, international house, University of Chicago; bids on general contract Sept. 5.

400 tons, highways and bridges, state of Kentucky; bids to be asked early in September.

394 tons, six bridges, Cook county, Illinois; bids received Aug. 25, 133 tons, Oakton street and Des Plaines river; 91 tons, Salt Creek; 170 tons, First avenue and Des Plaines river, Paschen Bros., low; unstated tonnage, Chicago avenue and Des Plaines river, E. F. Albrecht, low.

310 tons, Higbee Co. department store, Cleveland; bids in.

225 tons, office building, Acme Realty Co., Cleveland, East Ninth street and Chester avenue.

225 tons, warehouse, Franklin Furniture Co., Brooklyn, N. Y.

145 tons, outer drive bridge work, Chicago, Paschen Bros., low.

140 tons, warehouse, Eyres Transfer & Storage Co., Seattle; general contract to A. F. Mowat.

120 tons, storm sewer, Avenue X, Brooklyn, N. Y.

Unstated tonnages, Isaac Stevens hotel, Seattle; bids within 60 days; Tom Haire, Northern Life tower, Seattle, architect.

## Structural Inquries

(*Continued from Page* 81)

Central railroad, East Fortieth street and lake front, Cleveland, bids closed Aug. 29.

600 tons, theater and office building, R-K-O Corp., Albany, N. Y.

600 tons, four deck plate girder spans, Monessen & Southwestern railway, Pricedale, Pa.

550 tons, United States postoffice extension, Tulsa, Okla.

550 tons, hospital, Cleveland Clinic, Cleveland; bids closed Sept. 3.

550 tons, Hyde Park school, Niagara Falls, N. Y.

460 tons, pier shed, Camden, N. J.

425 tons, factory building, Toledo, O.; general contract to A. Bentley & Sons, Toledo.

400 tons, Old River bridge, Texas & Pacific railway, Louisiana.

400 tons, theater and office building, R-K-O Corp., Schenectady, N. Y.

400 tons, bridge work for Texas & Pacific railroad at Turnbull, La.

400 tons, plant, Stockton Firebrick Co., Pittsburgh, Calif.; bids being taken.

375 tons, highway bridge at Fonke, Ark.

350 tons, teachers' training building, Ohio State university, Columbus, O.

(*Concluded on Page* 96)

# Pipe

**Cast Pipe More Active—Five Orders Placed in East—1287 Tons Awarded in California**

**PIPE PRICES, PAGE 99**

**New York**—Cast pipe buying is light. Inquiry for small lots is fairly active, but large tonnages for municipal water line expansion are few. Several contracts pend for upper New York. Bids are in on several hundred tons of 54-inch pipe for Mamaroneck, N. Y. Utility buying is slack with little inquiry. Prices are unchanged and firm on a basis of $36 to $37, eastern and southern foundry. More Pipe has moved at the inside figure. Foundries are reducing backlogs, especially on larger sizes which made up of the bulk of orders earlier in the season. Sloatsburgh, N. Y., placed 500 tons of small size pipe. Bids will be taken this month on 12-inch water line from the Lockport, N. Y., reservoir to the new plant of the Simonds Saw & Steel Co., that city.

**Pittsburgh**—New business in tubular products is light. Oil country requirements have declined recently and standard pipe fails to show any improvement in demand. Additional line pipe orders are lacking but heavy backlogs sustain mill operations at capacity on the larger diameters of lapwelded and seamless pipe. It is not likely that additional substantial line pipe tonnages will be entered before late 1930 but active and prospective projects are thought to insure a favorable outlook for the early part of next year. Mill operations are unchanged.

**Chicago**—The local cast pipe market is quiet and unchanged, with nothing being awarded in this district. The 861 tons job of 8 to 24-inch for Minneapolis, bids for which opened Aug. 21, is still open, awaiting decision of the water board. It is understood that American Pipe & Foundry Co. is low. Better movement by cast iron pipe is expected for the remainder of the year following holidays and vacations.

**Philadelphia**—Bids closed on 1000 feet of 20-inch steel pipe for United States army engineers, Philadelphia district.

**Birmingham, Ala.**—While cast pipe buying is slow, production is maintained and shipments are steady. Trade opinion is that improvement is in sight and considerable business is expected this month. Lettings are not yet aggregating heavily and yard stocks are being cut down gradually.

# A NEW IDENTIFICATION MARK

For the UNITED STATES STEEL CORPORATION
and its Subsidiary Manufacturing Companies

THE Subsidiary Manufacturing Companies of the United States Steel Corporation hold in common this simple ideal of service—constantly to seek improvements for their products, and to make these products available on a basis that assures a full measure of value. The new mark here introduced to you stands for this ideal of service and is a sign of quality. In future advertising and promotion work, it will be used in connection with the well known symbols of this Company.

## AMERICAN BRIDGE COMPANY

General Offices: 71 Broadway, New York, N. Y.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL AND WIRE COMPANY
CARNEGIE STEEL COMPANY
COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPB'LDG. & DRY DOCK CO.
ILLINOIS STEEL COMPANY
NATIONAL TUBE COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & RAILROAD CO.
UNIVERSAL ATLAS CEMENT COMPANY

*Pacific Coast Distributors* — Columbia Steel Company, Russ Bldg., San Francisco, Calif.

*Export Distributors*—United States Steel Products Company, 30 Church St., New York, N.Y.

Little pig iron is being carried and specifications to furnace interests are for early needs only.

## Contracts Placed

900 tons, 4 to 12-inch cast pipe, Bedford Hills, N. Y., to R. D. Wood & Co., Florence, N. J.

783 tons, 6 to 12-inch class 250 cast pipe for Glendale, Calif.; allocated as follows: 69 tons of 6-inch to Pacific States Cast Iron Pipe Co., and 714 tons of 6 to 12-inch to National Cast Iron Pipe Co., Birmingham, Ala.

525 tons, 7 to 9-foot cast pipe for telephone line tunnel under Harlem river, New York, to Warren Foundry & Pipe Co., Phillipsburg, N. J.; Merriett-Chapman & Scott Corp., general contractors.

504 tons, 4 to 8-inch class 150 cast iron pipe for Fresno County Waterworks District No. 1, Fresno, Calif., to Edgley Co., Los Angeles.

500 tons, 4, 6 and 8-inch pipe for Sloatsburg, N. Y., to Universal Pipe Co.

375 tons, mostly 12-inch cast pipe for Clifton Springs, N. Y., to R. D. Wood & Co., Florence, N. J.

200 tons, 14 and 16-inch cast pipe for Scarsdale, Westchester county, N. Y., to United States Pipe & Foundry Co., East Burlington, N. J.; fittings to Donaldson Iron Works, Emaus, Pa.

## Contracts Pending

525 tons, 24-inch class B cast pipe for Los Angeles Harbor commission; bids Sept. 10.

190 tons, 16-inch class B cast pipe for Thirty-fiifth avenue N. E., Seattle; bids in.

104 tons, 4 and 6-inch class 150 cast pipe for Whittier, Calif.; bids Sept. 8.

Unstated tonnage, 12-inch cast pipe water line from reservoir to plant of Simonds Saw & Steel Co., Lockport, N. Y.; bids late this month.

**Steel Pipe Pending**

Unstated tonnage, 1000 feet of 20-inch steel pipe, United States army engineers, Philadelphia; bids closed.

## Iron Ore Shipments Down 25.4 Per Cent

**Iron Ore Prices, Page 88**

**Cleveland** — Shipments of Lake Superior iron ore in August amounted to 8,251,699 tons, compared with 10,806,967 tons last year, a decrease of 23.6 per cent. Shipments this year to Sept. 1 total 32,575,921 tons, against 43,717,787 tons in the comparable period of last year, a reduction of 25.4 per cent. On this basis total shipments for the season will be approximately 50,000,000 tons. No late-season demand is developing for ore.

## Starts Battery of Ovens

Eighty-two new by-product coke ovens of the Koppers-Becker type recently were placed in initial production by the New England Fuel & Transportation Co., Everett, Mass. Their addition increases the output 516,600 net tons annually.

# Wire

**Usual Seasonal Upturn Slow to Manifest Spring Presence—Fencing Terms Announced**

**WIRE PRICES, PAGE 77**

**Pittsburgh** — Business in wire products remains slow, with demand from agricultural sections failing to show its usual seasonal upturn. Producers have announced spring dating terms on farm and poultry fence, effective Aug. 18 for the southern district and Sept. 2 for the northern section. A definite curtailment in purchases of fencing and other wire products used in the agricultural districts is looked for as the result of the reduced farm income. Manufacturers' wire remains slow despite a mild increase in tonnage over the past several weeks. Nail demand is steady but quiet. Prices generally are unchanged at 2.30c for plain wire and $2.05 to jobbers for wire nails.

**Worcester, Mass.**—August closed with shipments and production on a slightly higher level than July and June. While demand for accessory lines has featured the market for the past few weeks manufacturers look forward to increased demand for staple lines in third quarter specifications. Plain bright wire to dealers is firm at 2.40c, base, Worcester.

**Cleveland**—Occasional mixed carload orders for wire products are received from jobbers. The late summer turnover was disappointing and replacements are not extensive. Some fair size orders for wire, wire rods, etc., are received from nut, bolt, rivet and screw manufacturers, reflecting a slight upturn in automotive demand. Some wire for cushion springs was recently purchased in the Detroit area. Nails are $2.05, Cleveland; wire, 2.30c, Cleveland.

**Chicago**—Wire and wire products are slow to country districts, but producers rely on good general crop conditions with the exception of some drought areas around Kansas and other sections, and a feeling that an upward trend should become noticeable within the next two weeks. Operations and prices are unchanged. August sales were better than July. The latter month, producers are coming to realize, will undoubtedly be the low for 1930.

**New York**—Despite concessions of five cents a keg, the nail market here continues fairly steady at $2.05, Pittsburgh. Plain bright wire is 2.30c, Pittsburgh. Business is quiet.

**Philadelphia**—Black annealed wire is down $2 a ton to 2.20c, Pittsburgh. Plain bright wire is fairly steady at 2.30c, Pittsburgh. Nails are soft at $2, Pittsburgh. Only on small lots does $2.05 appear quotable.

## Bolt, Nut, Rivet Buying Steady at Low Rate

**Bolt, Nut, Rivet Prices, Page 77**

**Pittsburgh** — Specifications for bolts, nuts and rivets are steady at a low rate. A slight gain is noted in demand from a few industries but August tonnage fell moderately below that of July. Operations continue around 40 to 50 per cent. No change is expected in fourth quarter prices from current levels of 2.75c for structural rivets and 73 off for bolts and nuts.

**Cleveland**—With a slight increase in buying on the part of automotive customers and gradual expansion in jobber buying, nut and bolt manufacturers are able to maintain operations at 40 to 50 per cent. Rivet orders are slightly heavier from structural shops, though tank and boiler manufacturers are not taking much tonnage. Individual orders remain small. Prices are unchanged.

**Chicago**—Bolt and nut makers, operating unchanged at 40 per cent capacity, say occasional spurts are heard of in orders from the implement people, with a good volume sustained for the past few days. Prices are without change.

## Chrysler, Once a Mechanic, Tells of Huge Employe Policy

"My early days were spent in a machine shop," says Walter P. Chrysler in a foreword to a booklet on "The Men Who Make Chrysler Motors." "I started out as a workman, first as an apprentice and then as a journeyman mechanic. I gained the feeling that my attitude toward my job was reflected in the quality of the thing I did."

Chrysler Industrial association, an organization of employes operating through a committee of five men from each of the nine Chrysler plants, is the means by which Chrysler Corp. promotes the interests of its workers. A combined life, sickness and accident insurance policy, with co-operation of the company, totals $69,000,000, said to be the second largest of its kind.

# Raw Material Prices

## Pig Iron

**Per Gross Ton**

**FOUNDRY, NO. 2**

| | |
|---|---|
| Chicago, furnace | $17.50 |
| Pittsburgh, district fur. | 18.50 |
| Pittsburgh, delivered | 19.13 to 19.63 |
| Valley, furnace | 18.00 |
| Cleveland fur., local del. | 18.00 |
| Philadelphia, delivered | 19.26 |
| Virginia, furnace | 17.75 |
| Granite City, Ill., fur. | 18.00 to 18.50 |
| Buffalo, fur., local del. | 18.50 |
| Buffalo, del. Boston | 21.41 to 21.91 |
| Buff., all-rail Brooklyn | 20.91 |
| Buff., all-rail, Newark | 19.28 |
| Ala., Bir. fur., local del. | 14.00 |
| Alabama, del. Chicago | 17.51 to 18.01 |
| Alabama, del. St. Louis | 17.42 |
| Alabama, del. Cincinnati | 16.19 to 17.19 |
| Alabama, del. Cleveland | 18.51 to 19.01 |
| Ala., Phila., dock del. | 17.25 to 18.25 |
| Ala., Balt., dock del. | 17.00 to 18.00 |
| Alabama, New York dock | 17.00 to 17.50 |
| Ala., Boston dock del. | 20.21 |
| Tenn., Bir. base, local del. | 14.00 |
| Tennessee, del. Cin. | 16.19 to 17.19 |
| Montreal, delivered | 23.50 |
| Toronto, delivered | 22.10 |

**FOUNDRY, NO. 2X**

| | |
|---|---|
| Buffalo, fur., local del. | 19.00 |
| Buff., all-rail, Brooklyn | 21.41 |
| Buffalo, all-rail Newark | 19.78 |
| Buffalo, del. Boston | 21.91 to 22.41 |
| Virginia furnace | 18.25 |
| Eastern, del., Phila. | 19.76 |

**FOUNDRY, NO. 1X**

| | |
|---|---|
| Buffalo fur., local del. | 20.00 |
| Eastern, del., Phila. | 20.26 |

**MALLEABLE**

| | |
|---|---|
| Chicago, furnace | 17.50 |
| Cleveland fur., local del. | 18.00 |
| Pittsburgh district fur. | 19.00 |
| Pittsburgh, delivered | 19.63 to 20.13 |
| Valley furnace | 18.50 |
| Buffalo fur., local del. | 19.00 |
| Eastern Penna., delivered | 19.26 to 20.91 |
| Granite City, Ill., fur. | 18.00 to 18.50 |
| Montreal, delivered | 24.00 |
| Toronto, delivered | 22.60 |

**BASIC**

| | |
|---|---|
| Pittsburgh dist. fur. | 18.50 |
| Pittsburgh, delivered | 19.13 to 19.63 |
| Eastern Penn., del. | 18.00 to 18.50 |
| Buffalo fur., local del. | 18.00 |
| Montreal, delivered | 22.50 |
| Valley furnace | 18.00 |

**BESSEMER**

| | |
|---|---|
| Valley furnace | 18.50 |
| Pittsburgh, delivered | 20.26 |

**LOW PHOS**

| | |
|---|---|
| Valley fur., standard | 27.00 |
| Philadelphia, standard | 24.26 to 24.76 |
| Furnace, copper-bearing | 23.00 to 23.50 |

**GRAY FORGE**

| | |
|---|---|
| Pittsburgh district fur. | 18.00 |
| Pittsburgh, delivered | 18.63 to 19.13 |

**CHARCOAL**

| | |
|---|---|
| Lake Superior, del. Chicago | 27.04 |

**SILVERY**

**Jackson County, O., fur., in per cents**

5—$21.50; 6—$21.50; 7—$22.00; 8—$22.50 to $23.00; 9—$23.00 to $24.00; 10—$23.50 to $27.00; 11—$24.50 to $28.00; 12—$25.50 to $30.00; 13—$26.50 to $32.00.

**BESSEMER FERROSILICON**

**Jackson County, O., fur., in per cents**

10—$29; 11—$31; 12—$33; 13—$35; 14—$37; 15—$39; 16—$42; 17—$45.

## Coke

**Prices Per Net Tons**

**Beehive Ovens**

| | |
|---|---|
| Connellsville furnace | $2.60 |
| Connellsville foundry | 3.50 to 4.85 |
| New River foundry | 6.00 |
| Wise county foundry | 4.25 to 5.00 |
| Wise county furnace | 3.50 to 4.25 |

**By-Product Foundry**

| | |
|---|---|
| Newark, N. J., del. | $9.00 to 9.40 |
| Chicago ovens | 8.00 |
| New England, del. | 11.00 |
| St. Louis, del. | 9.00 |
| Birmingham, ovens | 5.00 |
| Indianapolis, del. | 8.25 |
| Ashland, Ky., ov., Connell. basis | 5.50 |
| Portsmouth, O. ov., Connell. basis | 5.50 |
| Buffalo ovens | 8.00 to 8.50 |
| Detroit ovens | 8.50 |
| Philadelphia, del. | 9.00 |

## Iron Ore

**LAKE SUPERIOR ORE**

| **Gross Ton, 51½%, Lower Lake Ports** | |
|---|---|
| Old range bessemer | $4.80 |
| Mesabi bessemer | 4.65 |
| Old range nonbessemer | 4.65 |
| Mesabi nonbessemer | 4.50 |
| High phosphorus | 4.40 |

**EASTERN LOCAL ORES**

**Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces**

| | |
|---|---|
| Foundry and basic, 56-63%, contract | 10.00 |
| Copper-free low phos. 58.65% | nom. |

**FOREIGN ORE**

**Cents per units, alongside docks Atlantic ports**

| | |
|---|---|
| Foreign manganiferous ore, 45-55% iron, 6-10% manganese | 10.50 to 11.00 |
| North African low phosphorus | 10.50 |
| Swedish basic, 65% | 9.50 to 10.50 |
| Swedish low phos. | 11.00 |
| Spanish, North African basic, 50 to 60% | 9.50 to 10.00 |
| Newfoundland fdy., 55% | 9.00 |
| Tungsten, spot and future short ton unit, duty paid | $12.25 |
| Chrome ore, 48%, net ton c.i.f. | $21.50 to 22.50 |

## Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

| | |
|---|---|
| Caucasian, 52-55% | 27 to 28 cents |
| Indian, 48-50% | 27 to 28 cents |
| Brazilian, 46-48% | 25 cents |

## Refractories

**FIRE CLAY BRICK**

**Per 1000 f.o.b. Works**

**First Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | $43.00 |
| Georgia, Alabama | 40.00 to 47.00 |

**Second Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | 35.00 to 38.00 |
| Georgia, Alabama | 30.00 to 35.00 |

**SILICA BRICK**

| | |
|---|---|
| Pennsylvania | 43.00 |
| Joliet, Ill., East Chicago, Ind. | 52.00 |
| Birmingham, Ala. | 50.00 to 51.00 |

**MAGNESITE BRICK**

**Per net ton**

| | |
|---|---|
| 9 x 4½ x 2½ | 55.00 |

**MAGNESITE**

| | |
|---|---|
| Dead burned grain, net ton, Chester, Pa., or Baltimore base | 40.00 |
| Domes, Chewelah, Wash., base | 22.00 |

**CHROME BRICK**

| | |
|---|---|
| Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½ | 45.00 |

## Semifinished Steel

**Prices Per Gross Ton**

**BILLETS AND BLOOMS**

**4 x 4-inch base**

| | |
|---|---|
| Pittsburgh, open-hearth | $31.00 |
| Pittsburgh, bessemer | 31.00 |
| Youngstown | 31.00 |
| Cleveland | 31.00 |
| Philadelphia | 36.30 |
| Chicago | 32.00 |
| Forging, Chicago | 37.00 |
| Forging, Pittsburgh | 36.00 |
| Forgings, Philadelphia | 41.30 |

**SHEET BARS**

| | |
|---|---|
| Pittsburgh | $31.00 |
| Youngstown | 31.00 |
| Cleveland | 31.00 |
| Chicago | 32.00 |

**SLABS**

| | |
|---|---|
| Pittsburgh | $31.00 |
| Youngstown | 31.00 |
| Cleveland | 31.00 |

**WIRE RODS**

| | |
|---|---|
| Pittsburgh, Cleveland | $36.00 |
| Chicago | 37.00 |

**SKELP**

| | |
|---|---|
| All grades, Pittsburgh | 1.65c to 1.70c |

## Ferroalloys

**(In dollars, except Ferrochrome)**

| | |
|---|---|
| *Ferromanganese, 78-82%, tidewater, duty paid | $99.00 |
| *Ferromanganese, del. Pittsburgh | 103.79 |
| Spiegeleisen, 19-21%, domestic fur. spot† | 33.00 |
| *Ferrosilicon, 50 per cent, freight all., c. l. | 83.50 |
| *Do, less carload | 88.50 |
| Do, 75 per cent | 13.00 to 15.00 |
| Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del. | 11.00 |
| Do, for spot delivery | 11.50 |
| Ferrotungsten, stand., lb. cont. | 1.10 |
| Ferrovanadium, 30-40 per cent, per lb., contained, on analysis | 3.15 to 3.65 |
| Ferro-carbon-titanium carload producers' plants, net ton | 160.00 |
| Do., one ton to c. l. | 170.00 |
| Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent) | 91.00 |
| Ferrophosphorus, electrolytic per ton, carload, 23-25% f.o.b. Anniston, Ala., 24% | 122.50 |

†Carloads. Differentials apply to large quantities.

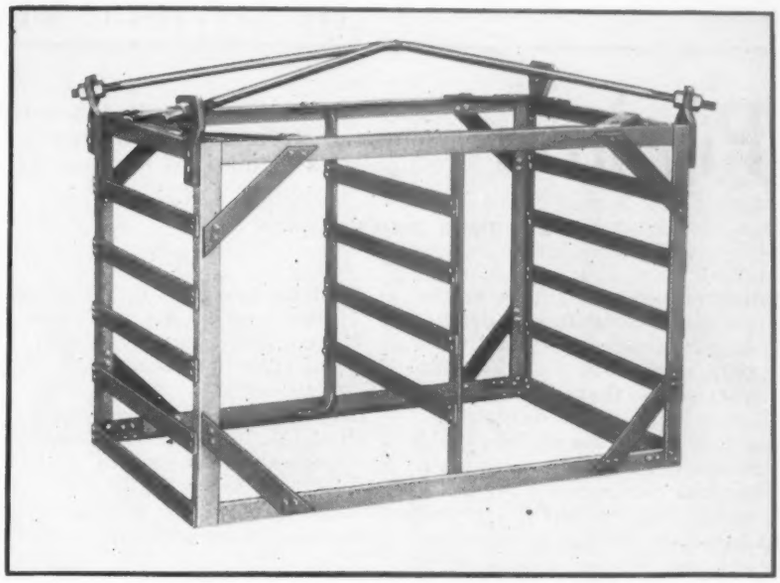
*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

## Fluorspar

**85 and 5 per cent grade**

| | |
|---|---|
| Washed gravel Kentucky and Illinois mines, per net ton | $18.00 |
| Washed gravel, import duty paid east, tide, gross ton | 19.50 |

№42
Pickling Equipment that passes the test of service



*Type of Monel Metal rack for pickling formed steel strips in the New England plant of a prominent electric manufacturing company. Steel racks formerly used were replaced every few weeks. This Monel Metal equipment was designed and fabricated by ROLOCK, INC., Southport, Conn.*

# SPECIAL CRATES...

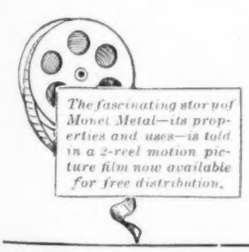
## *built from standard Monel Metal shapes*

THE pickling crate illustrated was made by Rolock, Inc. of Southport, Conn., for the processing department of a large electrical goods manufacturer. Although this crate was designed to meet highly specialized pickling room requirements, it was fabricated from standard rolled Monel Metal forms.

Monel Metal's ready adaptability to any type of pickling equipment is one reason why leading processors and fabricators are switching to this modern material. Another reason is Monel Metal's remarkable resistance to corrosion. Monel Metal is practically unaffected by either acid or alkaline pickling solutions; it will not plate out copper on the pickled ware.:.it shows but a negligible decline in weight after years of daily exposure to strong pickling agents.

With its phenomenal corrosion-resistance Monel Metal combines great strength and rigidity. Due to its flawless rolled and forged structure it will bear the burden of heavy loads and hard knocks for long periods without need of repair or replacement and without concern for the integrity of its structure.

Our engineers have made an exhaustive study of pickling room problems and requirements. Their valuable experience is at your disposal. Just write.



*The fascinating story of Monel Metal—its properties and uses—is told in a 2-reel motion picture film now available for free distribution.*

MONEL METAL

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

INCO MONEL METAL

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

# Pig Iron

**Sales Limited to Small Lots—Southern Iron Lower—August Shipments Ahead of July**

PIG IRON PRICES, PAGE 88

**Pittsburgh**—The pig iron market outlook still is clouded, sales holding to a low rate. Melters continue to buy only small lots. August shipments were less than those of July. Producers have reduced their surpluses moderately despite low levels of operations. Some seasonal quickening in iron requirements are looked for shortly. Prices are fairly well maintained on current business, but it is believed tonnage buying would bring out lower levels.

**Boston**—Pig iron sales during the past week totaled 2500 tons, most of which went to Buffalo furnaces. Prices remained firm. Foundries are taking more business.

**New York**—The holiday yesterday resulted in further restriction in pig iron buying. It is doubtful if more than 4000 to 5000 tons were closed during the week. Most orders were small. Fresh inquiry aggregated possibly 1500 tons. Prices are unchanged with Buffalo iron holding at $16, base, and southern iron at $17 to $17.50, delivered, New York docks. Barge rates, however, are stiffening as the grain movement sets in.

**Philadelphia** — Orders and inquiries for pig iron are small. The recent price of $19, furnace, has virtually disappeared, the representative figure now being $18.50, pending a test which would be supplied by larger tonnages than now appearing.

**Buffalo**—Inquiry for pig iron is light, The Worthington Pump & Machinery Corp. is expected to purchase 500 tons during the week. Producers here booked 4000 to 5000 tons mainly in small lots. Considerable pressure is brought upon producers by foundries desiring immediate delivery. Prices are unchanged.

**Cincinnati** — Although shipments of pig iron on old orders are somewhat improved, new business here during the past week was limited to carload lots with a total of less than 2000 tons. Reports that some southern iron is offered at $12, base Birmingham, persists. A southern Indiana buyer has delayed a few days in closing on an inquiry for 200 to 300 tons. No other inquiries except for carload lots are reported.

**Cleveland**—Foundries are figuring on more inquiries for castings, which usually is the forerunner of larger orders for pig iron. The volume of business done by furnace interests with headquarters in Cleveland was 10,000 tons in the past week, and did not differ much from that of the week preceding. Shipments continue to gain slightly. The movement for August was slightly larger than that of July. Prices are unchanged. Cleveland furnaces are doing $18, base, furnace, for local delivery. Lake furnaces sell at $16.75 to $17 in competitive territory, while $18, base, is the usual price in Michigan.

**Chicago**—Merchant furnace operations are scheduled for at least the early part of September at slightly above 60 per cent, unchanged from recent weeks. August shipments were nearly 20 per cent ahead of July. Eastern lake iron is being offered at East Chicago docks, and 1800 to 2000 tons are at Milwaukee. Part of the latter is an unusual grade for a jobbing foundry. Despite lower price offers for dock iron the movement continues slow. Furnace iron here is being quoted $17.50, base. Dropping of silicon differentials on attractive southern iron inquiries results in $11.50, base, Alabama furnace. Several small lots of silvery iron have been closed here and at St. Louis.

**Birmingham, Ala.** — Shipments still exceed production. One or more furnaces will be blown out shortly. But little business has followed announcement that there will be no change in the low freight rate to the Atlantic coast points. The local base price is maintained at $14.

**Toronto, Ont.**—Demand for merchant pig iron has improved. Sales are confined to small tonnages but reach a high weekly aggregate. No future buying is being done, but improvement in this business is expected about the middle of September. Prices are unchanged.

## Ferroalloy Shipments Show Slight Improvement

Ferroalloy Prices, Page 88

**New York**—Domestic spiegeleisen 19 to 21 per cent is moving slowly at $33, furnace, subject to differentials on quantities larger than carload. Ferromanganese also is unchanged at $99, duty paid, tidewater on lots of carloads to 500 tons annually. Specifications reflect the slight improvement in steel mill operations.

Tungsten ore is stronger, now quoted at $12.25 per ton, duty paid. The market is active in Europe, though quiet here.

**Pittsburgh**—Ferroalloy shipments show little change. Movement of ferromanganese is slightly heavier in some directions, reflecting improved operations at a few steelmaking plants, but the upturn is light. Demand for most grades of other ferroalloys continues light, with little activity noted in the spot market. Spot prices generally are unchanged, with ferromanganese $103.79, delivered, and spiegeleisen $33, furnace, for small lots. Ferrotungsten continues $1.10.

## Semifinished Inquiries Appear; Tonnage Light

Semifinished Prices, Page 88

**Pittsburgh**—Some inquiry is appearing for semifinished steel, mainly for sheet bars and forging billets. Tonnage booked, however, is light. Prices quoted on new business usually are $31 for rerolling billets, sheet bars and slabs, and $36 for forging billets. Wire rods continue $36. Skelp remains fairly active due to continued heavy production of line pipe. The market usually is 1.70c although reports of 1.65c are becoming more prominent.

**Philadelphia**—Demand for semifinished steel is sluggish. Rerolling billets are steady at $31, base, Pittsburgh, and forging quality $36.

**Cleveland**—Demand for sheet bars shows a slight upward trend. The leading merchant producer here continues with four of its 14 open hearths active but may increase the number to five this week. Sheet bars, billets and slabs are $31, Cleveland and Youngstown.

## Bridge Designs Reproduced

Outstanding designs of a steel arch bridge submitted by students of architecture and structural engineering for the annual competition arranged by the American Institute of Steel Construction Inc., have been published in a 20-page booklet of the institute entitled "Bridge Designing." The booklet reproduces designs submitted by seven engineering and ten architectural students and selected from the preliminary competitions to compete in the final judgment. Two separate competitions were held, from both of which three prize winners were selected.

# Scrap

**Scarcity Aids Strength in Steel Grades—Buying Not General—Prices Hold Steady**

**Chicago**—Better sentiment is current among iron and steel scrap dealers, though with but one exception none is bullish on the market. Dealers have few orders on books. Steelmakers have fairly good sized stocks. No large tonnages are moving and if reported sales of heavy melting steel were going at $13 a ton there would be more competition for available scrap tonnages.

Rail lists are nominal. Pennsylvania, Michigan Central, and a small Chicago, Milwaukee, St. Paul & Pacific list closed Sept. 2 and 3. Prices are unchanged, though weak.

**Boston**—Firm prices rule in steel and iron scrap, with little increase in trading. Buying from Pittsburgh consumers had been expected but it has not appeared. Stronger prices at

## Iron and Steel Scrap Prices

**Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.**

### HEAVY MELTING STEEL

| | |
|---|---|
| Birmingham | 10.50 to 12.00 |
| Boston dealers | 9.05 to 9.55 |
| Buffalo, No. 1 | 13.00 to 13.50 |
| Buffalo, No. 2 | 11.00 to 12.00 |
| Chicago | 12.00 to 12.25 |
| Cinci., deal. | 11.25 to 11.75 |
| Cleve., No. 1 | 12.00 to 12.25 |
| Cleve., No. 2 | 11.25 to 11.50 |
| Det., No. 1 deal. | 11.00 to 11.50 |
| Det., No. 2 deal. | 9.50 to 10.00 |
| E. Pa. del. mill | 12.50 |
| N. Y. del. R. R. | 9.00 to 10.50 |
| N. Y. deal. No. 2 | 6.25 to 6.75 |
| N. Y., deal. yd. | 6.00 to 6.50 |
| Pitts. No. 1 | 15.25 to 16.00 |
| St. L. No. 1 sel. | 11.50 to 12.00 |
| Federal, Ill. | 11.00 to 11.50 |
| Granite C., Ill. | 10.00 to 10.25 |
| Valleys, No. 1 | 15.00 to 15.50 |

### COMPRESSED SHEETS

| | |
|---|---|
| Buffalo, dealers | 11.25 to 11.50 |
| Chicago | 10.25 to 10.75 |
| Cleveland | 11.50 |
| Detroit, dealers | 11.00 to 11.50 |
| E. Pa. new mat. | 11.50 |
| Pittsburgh | 15.00 to 15.50 |
| Valleys | 14.50 to 15.00 |

### BUNDLED SHEETS

| | |
|---|---|
| Buffalo | 9.00 to 9.50 |
| Cinti., deal. | 9.75 to 10.25 |
| Cleveland | 9.00 to 9.25 |
| Eastern Pa. | 9.50 to 10.00 |
| Pittsburgh | 13.50 to 14.00 |
| St. Louis | 6.50 to 7.00 |

### SHEET CLIPPINGS LOOSE

| | |
|---|---|
| Chicago | 7.50 to 8.00 |
| Cincinnati | 7.75 to 8.25 |
| Detroit, dealers | 8.00 to 8.50 |
| St. Louis | 6.50 to 7.00 |

### STEEL RAILS SHORT

| | |
|---|---|
| Birmingham | 11.00 to 12.00 |
| Boston, dealers | 7.50 to 8.75 |
| Buffalo | 16.25 to 16.75 |
| Chicago (3 ft.) | 13.50 to 14.00 |
| Chicago (2 ft.) | 14.00 to 14.50 |
| Cinti., deal. | 17.00 to 17.50 |
| Detroit, deal. | 15.00 to 15.50 |
| Pitts. (open-hearth, 3 ft. and less) | 17.50 to 18.00 |
| St. Louis | 14.00 to 14.50 |

### STOVE PLATE

| | |
|---|---|
| Birmingham | 10.00 to 11.00 |
| Boston, con. | 8.50 to 9.00 |
| Buffalo | 10.25 to 10.50 |
| Chicago, net | 9.50 to 10.00 |
| Cinci., deal. net | 7.00 to 7.50 |
| Det., net, deal. | 9.00 to 9.50 |
| Eastern Pa. | 10.00 |
| N. Y., deal. mill | 6.00 |
| St. Louis | 9.00 to 9.50 |

### COUPLERS, SPRINGS

| | |
|---|---|
| Buffalo | 16.00 to 16.50 |
| Chicago | 13.50 to 14.00 |
| Eastern Pa. | 17.00 to 17.50 |
| Pittsburgh | 17.50 to 18.00 |
| St. Louis | 12.50 to 13.00 |

### ANGLE BARS—STEEL

| | |
|---|---|
| Chicago | 13.00 to 13.50 |
| St. Louis | 11.25 to 11.75 |

### LOW PHOSPHORUS

| | |
|---|---|
| Buf., billets and bloom crops | 17.50 to 18.00 |
| Cleveland bil. and bloom crops | 20.00 to 20.50 |
| Eastern Pa. | 17.50 to 18.00 |
| Pitts. billet and bloom crops | 20.00 to 21.00 |
| Pitts. sheet bar crops | 18.00 to 18.50 |

### FROGS, SWITCHES

| | |
|---|---|
| Chicago | 13.00 to 13.50 |
| St. Louis | 11.50 to 12.00 |

### SHOVELING STEEL

| | |
|---|---|
| Chicago | 12.00 to 12.25 |
| Cleveland | 8.75 to 9.00 |
| St. Louis | 11.00 to 11.50 |

### RAILROAD WROUGHT

| | |
|---|---|
| Birmingham | 10.00 to 10.50 |
| Boston, dealers | 7.50 to 8.00 |
| Buffalo, No. 1 | 10.00 to 10.50 |
| Buffalo, No. 2 | 13.50 to 14.00 |
| Chicago, No. 1 | 11.25 to 11.75 |
| Chicago, No. 2 | 12.00 to 12.25 |
| Cinti., No. 2 | 11.25 to 11.75 |
| Eastern Pa. | 14.00 to 14.50 |
| N. Y., No. 1 di. | 10.00 to 10.50 |
| Pitts. No. 2 | 15.25 to 16.00 |
| St. Louis, No. 1 | 9.00 to 9.50 |
| St. Louis, No. 2 | 11.00 to 11.50 |

### SPECIFICATION PIPE

| | |
|---|---|
| Boston | 7.00 to 7.50 |
| Eastern Pa. | 12.00 to 12.50 |
| N. Y., deal. | 7.25 to 7.50 |

### BUSHELING

| | |
|---|---|
| Buffalo, No. 1 | 11.25 to 12.50 |
| Chicago, No. 1 | 9.50 to 10.00 |
| Cinn., No. 1 dl. | 9.25 to 9.75 |
| Cinn., No. 2 | 6.25 to 6.75 |
| Cleve., No. 2 | 8.25 to 8.50 |
| Detroit, No. 1 new deal. | 9.50 to 10.00 |
| St. L. No. 1 | 9.00 to 9.50 |
| Val. new No. 1 | 13.75 to 14.25 |

### MACHINE TURNINGS

| | |
|---|---|
| Birmingham | 7.50 to 8.50 |
| Boston, dealers | 4.00 to 4.35 |
| Buffalo | 8.75 to 9.25 |
| Chicago | 6.25 to 6.75 |
| Cinn., deal. | 7.50 to 8.00 |
| Cleveland | 7.00 to 8.00 |
| Detroit | 5.75 to 6.25 |
| Eastern Pa. | 9.00 |
| N. Y., deal. | 5.00 to 5.50 |
| Pittsburgh | 8.00 to 8.50 |
| St. Louis | 6.75 to 7.25 |
| Valleys | 10.50 to 11.00 |

### BORINGS AND TURNINGS
**For Blast Furnace Use**

| | |
|---|---|
| Boston, deal. | 3.10 to 3.60 |
| Buffalo | 9.25 to 9.75 |
| Cinn., deal. | 7.75 to 8.25 |
| Cleveland | 8.75 to 9.00 |
| Detroit, deal. | 6.00 to 6.50 |
| Eastern Pa. | 7.00 to 8.50 |
| N. Y., deal. | 4.00 |
| Pittsburgh | 8.50 to 9.00 |

### CAST IRON BORINGS

| | |
|---|---|
| Birming., chem. | 12.00 to 13.00 |
| Birming., plain | 7.50 to 8.50 |
| Boston, chem. | 9.00 to 9.25 |
| Boston, deal. | 4.00 to 4.35 |
| Buffalo | 9.25 to 9.75 |
| Chicago | 7.50 to 8.00 |
| Cinn., deal. | 7.75 to 8.25 |
| Cleveland | 8.75 to 9.00 |
| Detroit, deal. | 6.00 to 6.50 |
| Eastern Pa. | 8.50 to 9.00 |
| E. Pa. chem. | 14.00 to 14.50 |
| N. Y., deal. | 4.50 |
| Pittsburgh | 8.50 to 9.00 |
| St. Louis | 9.25 to 9.50 |

### PIPE AND FLUES

| | |
|---|---|
| Cinn., deal | 9.00 to 9.50 |

### RAILROAD GRATE BARS

| | |
|---|---|
| Buffalo | 9.25 to 9.75 |
| Chicago, net | 8.50 to 9.00 |
| Cincinnati | 8.50 to 9.00 |
| Eastern Pa. | 10.50 |
| N. Y., deal. | 6.50 to 7.00 |
| St. Louis | 10.00 to 10.25 |

### FORGE FLASHINGS

| | |
|---|---|
| Boston, deal. | 7.25 to 7.60 |
| Buffalo | 11.00 to 11.50 |
| Cleve. ov. 10 in. | 10.00 to 10.50 |
| Detroit | 9.50 to 10.00 |

### FORGE SCRAP

| | |
|---|---|
| Boston, deal. | 6.00 to 6.50 |
| Chicago | 14.50 to 15.00 |
| Eastern Pa. | 12.00 |

### ARCH BARS, TRANSOMS

| | |
|---|---|
| Chicago, net | 13.00 to 13.50 |
| St. Louis | 14.00 to 14.50 |

### AXLE TURNINGS

| | |
|---|---|
| Boston, deal. | 6.75 to 7.00 |
| Buffalo | 11.50 to 12.00 |
| Chi. steelworks | 9.50 to 10.00 |
| Cleveland | 11.75 to 12.00 |
| Eastern Pa. | 11.50 to 12.00 |
| Pittsburgh | 12.50 to 13.00 |
| St. Louis | 9.25 to 9.75 |

### STEEL CAR AXLES

| | |
|---|---|
| Birmingham | 19.00 to 20.00 |
| Bos., ship. pt. | 16.50 to 17.50 |
| Buffalo | 16.00 to 16.50 |
| Chicago | 16.80 to 17.35 |
| Eastern Pa. | 21.00 to 21.50 |
| St. Louis | 16.00 to 16.50 |

### SHAFTING

| | |
|---|---|
| Bos., ship. pt. | 13.50 to 14.50 |
| Chicago | 16.25 to 16.80 |
| Eastern Pa. | 18.50 |
| N. Y., deal. | 13.00 to 14.00 |
| St. Louis | 13.00 to 13.50 |

### CAR WHEELS

| | |
|---|---|
| Birming., iron | 10.00 to 11.00 |
| Boston, iron | 14.00 to 14.50 |
| Buffalo, iron | 13.50 to 14.00 |
| Buffalo, steel | 16.00 to 16.50 |
| Chicago, iron | 13.50 to 14.00 |
| Chi., roll steel | 14.50 to 15.00 |
| Cincinnati | 12.00 to 12.50 |
| Pitts., iron | 15.00 to 15.50 |
| Pitts., steel | 17.50 to 18.00 |
| St. Louis iron | 12.00 to 12.50 |
| St. Louis, steel | 14.00 to 14.50 |
| E. Pa. steel | 16.75 to 17.00 |
| E. Pa. iron | 14.50 to 15.00 |

### NO. 1 CAST SCRAP

| | |
|---|---|
| Birming., cup | 12.00 to 13.00 |
| Buffalo (mac.) | 12.50 to 13.00 |
| Boston, textile | 11.50 to 12.00 |
| Chicago, mach. | 13.45 to 14.00 |
| Chi., railroad | 11.20 to 11.75 |
| Chicago, agri. | 10.90 to 11.50 |
| Cinn., mach. cup., gross | 17.75 to 18.25 |
| Cleve. cupola | 13.50 to 14.00 |
| Det., net deal | 10.00 to 10.50 |
| E. Pa. cupola | 13.50 |
| N. Y. cup. deal. | 9.50 to 9.75 |
| N. Y., del. local foundries | 14.00 |
| Pitts. cupola | 14.00 to 14.50 |
| San Fran., del. | 13.50 to 14.00 |
| Seattle | 14.00 to 14.25 |
| St. L. No. 1 ma. | 11.50 to 12.00 |
| St. L. No. 1 | 10.50 to 11.00 |

### HEAVY CAST

| | |
|---|---|
| Boston | 10.50 to 11.00 |
| Bos. Mach. cast | 13.50 to 14.00 |
| Buffalo, break | 8.50 to 9.00 |
| Cleve., break | 8.50 to 9.00 |
| Detroit, auto, net deal. | 11.50 to 12.00 |
| Det., break., dl. | 7.00 to 7.50 |
| Eastern Pa. | 11.50 to 12.50 |
| N. Y. No. 1 dl. | 8.00 to 8.50 |
| N. Y. break. dl. | 8.25 to 9.10 |
| Pittsburgh | 11.50 to 12.00 |

### MALLEABLE

| | |
|---|---|
| Boston R. R. | 15.00 to 15.50 |
| Buffalo | 15.00 to 15.50 |
| Chicago, agri. | 11.75 to 12.25 |
| Chicago, R. R. | 13.50 to 14.00 |
| Cinn., R. R. dl. | 15.00 to 15.50 |
| Cinn., agri. dl. | 14.25 to 14.75 |
| Cleve., rail | 15.50 to 16.00 |
| Det. auto deal. | 13.50 to 14.00 |
| St. Louis, rail | 10.00 to 10.50 |

### RAILS FOR ROLLING
**5 feet and over**

| | |
|---|---|
| Birming. cup. | 12.00 to 12.50 |
| Boston | 9.00 to 9.50 |
| Buffalo | 13.50 to 14.00 |
| Chicago | 14.50 to 15.00 |
| Eastern Pa. | 13.00 to 13.50 |
| New York | 9.50 to 10.00 |
| St. Louis | 12.50 to 13.00 |

### LOCOMOTIVE TIRES

| | |
|---|---|
| Chicago, cut | 15.00 to 15.50 |
| St. L. No. 1 | 13.00 to 13.50 |

### LOW PHOS. PUNCHINGS

| | |
|---|---|
| Chicago | 13.00 to 13.50 |
| Pittsburgh | 17.50 to 18.00 |
| Eastern Pa. | 17.00 to 18.00 |
| Buffalo | 17.00 to 17.50 |

# YMBOLS

## Steel Sheets and SERVICE

LOOK into the majority of today's commodities—and the base material of which they are made will generally be found to be steel. Whether the use be great or small—in the air, or on land or sea—there is scarcely a piece of construction or fabrication which does not contain some steel. Symbols are therefore placed on better steel as signs of quality, dependability and durability; as an assurance of SERVICE. For service to humanity is, after all, the only valid reason for the existence of any industry.

AMERICAN Sheets offer efficient and economical *service* on a plane with product quality—the kind that makes friends and keeps them. Supplied in Black and Galvanized Sheets, Special Sheets, Tin and Terne Plates for all known purposes; also KEYSTONE Copper Steel Products for uses requiring maximum rust-resistance.

U S STEEL

**American Sheet and Tin Plate Company**

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

QUALITY PRODUCTS — *Dependable Service*

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES:

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL AND WIRE COMPANY
CARNEGIE STEEL COMPANY
COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPB'LDG. & DRY DOCK CO.
ILLINOIS STEEL COMPANY
NATIONAL TUBE COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & RAILROAD CO.
UNIVERSAL ATLAS CEMENT COMPANY

*Pacific Coast Distributors*—Columbia Steel Company, San Francisco, Los Angeles, Portland, Seattle, Honolulu. *Export Distributors*—United States Steel Products Company, New York City.

consuming centers have their supporting effect here. A shipment of 600 tons of rails was loaded for Japan the past week.

**New York**—While most prices are unchanged, a stronger tone prevails in scrap. Higher prices in some grades are expected to develop before another week, although with restricted mill operations there appears little likelihood of a sharp advance. Heavy shipments of melting steel continue to move out of this district by barge, with some brokers paying as high as $10.50, barge, for the best grade. Offers for heavy melting steel for Pittsburgh, have been noted as high as $10.30, f.o.b. cars, but so far as can be learned little material is going to Pittsburgh. A leading Pottsville, Pa., consumer has again held up shipments of yard steel.

## Canadian Scrap

**Dealers' Buying Prices**

**MONTREAL**

**Per Gross Ton**

| | |
|---|---|
| Iron axles | $15.00 |
| Steel axles | 13.00 |
| Car wheels | 11.00 |
| Stove plate | 10.00 |
| Wrought pipe | 5.00 |
| Turnings | 6.00 |
| Heavy melting steel | 8.00 |

**TORONTO**

| | |
|---|---|
| Steel axles | 10.00 |
| Iron axles | 12.00 |
| Heavy melting steel | 9.00 |
| Turnings | 6.50 |
| No. 1 mach. cast (net) | 11.00 |
| Malleable (net) | 9.00 |

**Buffalo**—A little more buying has been done, the principal transaction being the sale of a medium tonnage of No. 2 heavy melting steel at a price reported to be $12. A tonnage of short shoveling turnings was sold at $9.75 and a sizeable inquiry for No. 1 machinery cast is being figured. The market is sentimentally softer through the continuance of regular shipments of hydraulic compressed sheets from western points and barge shipments of No. 1 and No. 2 heavy melting steel from the east.

**Pittsburgh**—Scrap is steady in a fairly quiet market. Material is scarce at low price levels, necessitating bids up to $15.50 by dealers in covering contracts. Little is available below $15.25. No new mill buying has been noted since the recent sale of a limited tonnage at $16. Low phosphorus is stronger but turnings are quiet.

**Cleveland** — Iron and steel scrap has not responded here to the influence of strength in nearby markets and prices continue at the low levels of the past several weeks. A large mill interest, which has been expected to issue releases this week for material, still continues out of the market. Another mill may enter the market, but purchases are likely to be small due to large stocks already on hand. Activity among both automotive and general foundries has increased slightly and this has brought about increased demand for a number of specialty grades.

**Cincinnati**—A shrinking in supplies of heavy melting steel and some other grades of scrap has added firmness to the market although quotations remain stationary.

**Toronto, Ont.**—While there is still considerable dullness in iron and steel scrap dealers point out that sales are beginning to show improvement. Mills were in the market during the week for heavy melting steel and turnings, and shipments to the Hamilton district were slightly better than average. Prices are unchanged.

**Philadelphia**—Persistent reports of a large purchase of No. 1 heavy melting steel by a Coatesville, Pa., consumer have been officially denied. Rumor said 18,000 to 20,000 tons were closed at $12.50 to $13, delivered. Meanwhile $12.50, delivered, appears to be the top. It is believed placing of heavy tonnage would bring 50 cent advance. Lots up to 500 tons have been placed in the past week at $12.50. A fair tonnage of heavy breakable cast has been sold at $11.50 and $12, delivered.

## Overrule Proposed Changes in Rates on Rails and Ties

Washington—The proposed revision in freight rates on iron and steel rails and cross ties, in carloads, from Newark, O., and Huntington, W. Va., to certain points in West Virginia, over interstate routes, Virginia, and Maryland, have not been found justified by the interstate commerce commission. However, there is no prejudice to the filing of new schedules in conformity with views expressed in the decision.

The suspended schedules have been ordered canceled. The decision is based on an investigation instituted by the commission in docket No. 3413 of the rates on iron and steel rails and cross ties from points in Central Freight association territory to points in Central Freight association and eastern trunk line territories.

# Coke

### Beehive Producers' Stocks Reduced—Furnace Fuel Stronger —Foundry Output Recedes

COKE PRICES, PAGE 88

**Pittsburgh**—Beehive coke producers are taking a stronger stand on prices, since they have eliminated most of their surplus fuel through continued restriction in production. Standard furnace coke usually is available at no less than $2.60, although such business is light in the spot market. Demand for blast furnace use is lacking. Foundry coke demand is steady, at unchanged prices. Heating fuel is quiet, but is due for seasonal improvement shortly.

Production of coke in the Connellsville region for the week ended Aug. 23 was 19,390 tons compared with 20,790 tons the preceding week and 95,060 tons in the same period a year ago, according to the *Connellsville Courier*.

**Boston**—Foundry coke continues to move in limited volume. Contract shipments are being taken at a fairly steady rate and recent buying of pig iron tends to the belief that a slight increase in the melt is contemplated.

**New York**—Beehive furnace coke remains at $2.50, Connellsville, and standard beehive foundry at $2.50 to $2.75, Connellsville. Premium brands of this latter are $4.85, Latrobe. Shipments continue light. By-product foundry coke is $9 to $9.40, delivered Newark; $11, New England; and $9, Philadelphia.

**Cincinnati** — Better specifications for by-product foundry coke have been received within the last few days. Oven interests, despite keen competition for contracts, are maintaining the new and lower price of $9.05, delivered Cincinnati.

**Birmingham, Ala.** — Independent producers are keeping most of their ovens in operation, but are not pushing production. Several foundries in this district will resume operations soon. Not much coke is being shipped from the district. The foundry grade still is $5, base, Birmingham.

# Pacific Coast

**Important Projects Proposed Sufficient to Give Active Market for Autumn—Most Present Buying Is in Small Lots—Total Sales Below Same Period Last Year—Prices Unchanged**

**Seattle**—Sufficient important projects are either pending or proposed to justify expectations that the iron and steel market in the Pacific Northwest will show marked improvement within sixty days. Prices are holding steady.

**Bars, Plates and Shapes**

Prices continue steady, mill prices of reinforcing being still 2.30c, merchant bars and shapes, 2.25c and plates firm at a minimum of 2.15c.

Demand for merchant bars is not heavy and reinforcing specifications are less than for some time. Recent awards have been in less than 100 ton lots. Operations at local mills are unchanged. Indications are for improved business next month, considerable important construction being projected. Contracts pending include two large hotel jobs, Seattle, Eyres warehouse, Seattle, 140 tons, 85 tons in a bridge near Wenatchee, Wash., and several small jobs in Seattle.

## Coast Pig Iron Prices

| | |
|---|---|
| Utah basic | $22.00 to 24.00 |
| Utah foundry | 22.00 to 24.00 |
| *German | 24.25 |
| *Indian | 22.00 to 24.00 |

*C.i.f. duty paid.

General Construction Co., Seattle, is building the Owyhee dam, a unit of the Vale, Oreg., reclamation project. The government is furnishing an unstated tonnage of steel for this job.

No developments of interest have appeared in the plate market but steel pipe fabricators are figuring on a large job at Anacortes, bids Sept. 5. Engineers have completed plans for the West Seattle water pipe project requiring 10,000 tons of plates and bids will be invited soon.

Less than 1000 tons of structurals are pending in three Northwest projects, 300 for the Fox theater, Spokane, bids in, 200 for the Howard street bridge, Spokane, bids Sept. 11 and 300 tons for the Hoh river highway bridge, Washington, bids Sept. 2. City Iron Works, Portland, has booked a small tonnage for the addition to the Portland grain elevators. Bids will be opened this week by provincial officials at Victoria, B. C. for a 150-foot Howe truss span for Fraser avenue, Vancouver. Tonnage involved in the Pacific Great Eastern bridge, Lillooet, B. C., reported last week as unstated, approximates 1000 tons and was taken by the Dominion Bridge Co., Vancouver, B. C.

**Pipe Demand Is Low**

Business is quiet not many important cast iron jobs being proposed. One Seattle contract involving 190 tons of 16-inch Class B is pending. Anacortes, Wash., has decided to receive bids from foreign pipe manufacturers when tenders are opened Sept. 5. Mt. Scott water district, Portland, Oreg., will open bids Sept. 6 for laying 76,500 feet of 2 to 4-inch pipe, furnishing a pumping outfit and building a reservoir.

**Old Materials**

Only the better grades of steel scrap, mostly railroad material, are being accepted at the two local mills, specifications having been tightened considerably recently. Prices are unchanged from $9.50 to $11 gross.

## Most Awards Are Small

**San Francisco**—(*By Air Mail*)—Movement of iron and steel products on the Pacific coast during the past week was confined, for the most part, to awards of less than 100 tons. Featuring the awards of the week were 1200 tons of structural shapes for a plant at Trona, Calif., for the American Potash & Chemical Co., booked by the Consolidated Steel Corp. The largest new inquiry calls for 2022 tons of cast iron pipe for the East Bay municipal utility district, Oakland, bids on which will be opened Sept. 24.

**Bars, Plates and Shapes**

Awards of reinforcing steel bars were the smallest of any week so far this year and aggregated less than 100 tons. So far this year 42,302 tons have been booked compared with 57,507 tons for the corresponding period last year. New inquiries are for small lots, ranging from 20 to 60 tons. Bids will be opened Oct. 31 for 2000 tons for the Burrard street bridge, Vancouver, B. C. Out-of-stock prices in the San Francisco district continue unchanged at 2.50c, base, on carload lots.

Demand for plates remains light. The General Terminal Corp., Los Angeles, has placed 100 tons for tank work with an unnamed Los Angeles fabricator. No change in quotations have occurred recently, 2.15c to 2.25c, c.i.f. being general.

The structural shape market was the most active, awards totaling 1855 tons and bringing the aggregate for the year to 80,718 tons, compared with 133,559 tons for the same period a year ago. The Golden Gate Iron Works took 300 tons for an apartment in San Francisco and the Judson-Pacific Co. secured 175 tons for a department store in Oakland. Bids are being taken on 400 tons for a plant in Pittsburg, Calif., for the Stockton Firebrick Co. Bids have been opened on 150 tons for a bridge over the Snodgrass Slough, Walnut Creek, Calif. Prices on plain material continue 2.15c to 2.25c, c.i.f.

More activity is noted in cast iron pipe. Awards this week aggregated 1462 tons and brought the total to date this year to 56,850 tons as compared with 63,416 tons for the corresponding period in 1929.

## Structural Inquiries

(*Concluded from Page* 85)

300 tons, grade crossing, New York Central railroad, Central Square, New York.

300 tons, highway bridge at Monee, Ill.

300 tons, theater, Steubenville, O.

300 tons, Hoh river state highway bridge, Washington; bids Sept. 2.

300 tons, warehouse, Gulf Refining Co., Beverly, Mass.

270 tons, bridge, Franklin, N. H.

250 tons, nurses' home, Binghamton, N. Y.

250 tons, school, Elizabeth, N. J.

240 tons, bridge, New York Central railroad, Athol Springs, N. Y.

200 tons, Milwaukee street bridge over Rock river at Watertown, Wis.; bids close Sept. 4.

200 tons, bridge, Howard street, Spokane; bids Sept. 11.

200 tons ,post office, White Plains, N. Ring Construction Co., Minneapolis, general contractor.

200 tons, bridge, route 4, section 7, Passaic, N. J.; bids Sept. 3.

200 tons, hospital building, Malden, Mass.

185 tons, biological laboratory, Harvard university, Cambridge, Mass.

180 tons, Shales Branch bridge, South Carolina highway department.

150 tons, bridge over Snodgrass slough, Walnut Creek, Calif.; bids received.

125 tons, bridge at Weston, Mass., for Boston & Maine railroad.

100 tons, office and laboratory, city of Detroit.

Unstated tonnage, bridge across Gaspe bay, Gaspe, Que., provincial department of public works has awarded general contract to Gaspe Bridge Co., bridge to cost $500,000.

Unstated tonnage, bridges, New Brunswick, N. J., Pennsylvania railroad; bids Sept. 5.

Unstated tonnage, apartment, West Twenty-third street, New York.

Unstated tonnage, addition, Bloomingdale hospital, White Plains, N. Y.

# Steel, Wrought and Cast Iron Pipe, and Tubing

## Welded Iron, Steel Pipe

**Base Price $200 ton**

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2 points less. Wrought iron pipe, Pittsburgh base.

**BUTT WELD**

| Steel In. | Blk. | Gal. | Iron In. | Blk. | Gal. |
|---|---|---|---|---|---|
| ⅛ | 58 | 44½ | ½ | 23 | 5 |
| ¼ | 62 | 50½ | ¾ | 28 | 11 |
| 1—3 | 64 | 52½ | 1 and 1¼ | 31 | 15 |
| | | | 1½ and 2 | 35 | 18 |

**LAP WELD**

| | | | | | |
|---|---|---|---|---|---|
| 2 | 57 | 45½ | 2 | 23 | 9 |
| 2½—6 | 61 | 49½ | 2½—3½ | 28 | 13 |
| 7—8 | 58 | 45½ | 4—6 | 30 | 17 |
| 9—10 | 56 | 43½ | 7 and 8 | 29 | 16 |
| 11—12 | 55 | 42½ | 9—12 | 26 | 11 |

**BUTT WELD**

*Extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| ½ | 55 | 44½ | ¼ & ⅜ | +13 | +48 |
| ¾ | 60 | 49½ | ½ | 23 | 7 |
| 1—1½ | 62 | 51½ | ¾ | 28 | 12 |
| 2—3 | 63 | 52½ | 1—2 | 34 | 18 |

**LAP WELD**

*Extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 55 | 44½ | 2 | 29 | 13 |
| 2½—4 | 59 | 48½ | 2½—4 | 34 | 20 |
| 4½—6 | 58 | 47½ | 4½—6 | 33 | 19 |
| 7—8 | 54 | 41½ | 7 and 8 | 31 | 17 |
| 9—10 | 47 | 34½ | 9—12 | 21 | 8 |
| 11—12 | 46 | 33½ | | | |

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

**BOILER TUBES**

**Carload Discounts, f.o.b. Pittsburgh**

| Lap Welded Steel | | Charcoal Iron | |
|---|---|---|---|
| 2—2¼ | 38 | 1¾ | 8 |
| 2½—2¾ | 46 | 2—2¼ | 13 |
| 3 | 52 | 2½—2¾ | 16 |
| 3¼—3¾ | 54 | 3 | 17 |
| 4 | 57 | 3¼—3½ | 18 |
| 4½—6 | 46 | 4 | 20 |
| 1½ | 1 | 4½ | 21 |

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

**STANDARD COMMERCIAL SEAMLESS BOILER TUBES**

**COLD DRAWN**

| | | | |
|---|---|---|---|
| 1 | 61 | 3 | 46 |
| 1¼—1½ | 53 | 3¼—3½ | 48 |
| 1¾ | 37 | 4 | 51 |
| 2—2¼ | 32 | 4½, 5, 6 | 40 |
| 2½—2¾ | 40 | | |

**HOT ROLLED**

| | | | |
|---|---|---|---|
| 2—2¼ | 38 | 3¼—3½ | 54 |
| 2½—2¾ | 46 | 4 | 57 |
| 3 | 52 | 4½, 5, 6 | 46 |

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

**SEAMLESS TUBING**

**Cold drawn; f.o.b. mill**

Random lengths over 5 ft.....55%
Selected lengths, 1 to 18 ft.....53%

## Cast Iron Water Pipe

**Class B Pipe—Per Net Ton**

**Six-inch and over, Bir. $37.00 to 38.00**
Four-inch, Birmingham 41.00 to 42.00
Four-inch, Chicago ..... 49.20 to 50.20
Six to 24-inch, Chicago 45.20 to 46.20
**Six-inch and over, N. Y. 38.50 to 40.50**
Four-inch, New York .... 41.50 to 42.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe $4 higher than Class B.

## Warehouse Quotations at Leading Centers, in Cents Per Pound

**STEEL BARS**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.265c |
| Buffalo | 3.15c |
| Chattanooga.. | 3.10c |
| Chicago | 2.90c |
| Cincinnati | 3.15c |
| Cleveland | 2.85c |
| Detroit | 3.00c |
| Houston | 3.00c |
| Los. Ang. | 3.40c |
| New York†† | 3.10c |
| Philadelphia . | 2.70c |
| Pittsburgh | 2.75c |
| Portland | 3.15c |
| San Frans. .. | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.15c |
| St. Paul | 3.15c |
| Tulsa | 3.65c |

**IRON BARS**

| | |
|---|---|
| Baltimore | 3.25c |
| Boston | 3.265c |
| Buffalo | 3.15c |
| Chattanooga.. | 3.10c |
| Chicago | 3.00c |
| Cincinnati | 3.15c |
| Detroit | 3.00c |
| New York†† | 3.10c |
| Philadelphia . | 2.70c |
| St. Louis | 3.15c |
| Tulsa | 3.65c |

**REINFOR. BARS**

| | |
|---|---|
| Baltimore | 2.50c-3.31c |
| Boston | 2.665c |
| Buffalo | 2.95c |
| Chattanooga.. | 3.10c |
| Cincinnati | 3.15c |
| Cleveland | 2.25c-2.44c |
| Detroit | 2.30c-3.00c |
| Houston | 3.00c |
| Los Ang. cl .. | 2.40c |
| Los Ang. lcl .. | 2.70c |
| New York | 2.65c-3.10c |
| Philadelphia . | 2.55c |
| Pittsburgh | 2.75c |
| San Fran. cl . | 2.30c |
| San Fran. lcl. | 2.60c |
| Seattle | 3.15c |
| St. Louis | 3.15c |
| Tulsa | 3.65c |
| Young. | 2.30c-2.60c |

**SHAPES**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.365c |
| Buffalo | 3.25c |
| Chattanooga.. | 3.20c |
| Chicago | 3.00c |
| Cincinnati | 3.25c |
| Cleveland | 2.95c |
| Detroit | 3.10c |
| Houston | 3.25c |
| Los. Ang. | 3.40c |
| New York | 3.10c |
| Philadelphia . | 2.60c |
| Pittsburgh | 2.85c |
| Portland | 3.15c |
| San Fran. .. | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.25c |
| St. Paul | 3.25c |
| Tulsa | 3.75c |

**PLATES**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.365c |
| Buffalo | 3.25c |
| Chattanooga.. | 3.20c |
| Chicago | 3.00c |
| Cincinnati | 3.25c |
| Cleveland, ¼-in. and thicker | 2.95c |
| Clev., 3/16-in | 3.20c |
| Detroit | 3.10c |
| Det., 3/16-in. | 3.10c |
| Houston | 3.00c |
| Los Angeles.. | 3.40c |
| New York | 3.30c |
| Philadelphia . | 2.60c |
| Pittsburgh | 2.85c |
| Portland | 3.15c |
| San Fran. | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.25c |
| St. Paul | 3.25c |
| Tulsa | 3.75c |

**NO. 10 BLUE**

| | |
|---|---|
| Baltimore | 3.50c |
| Bost. 3/16-in.. | 3.915c |
| Buffalo | 3.50c |
| Chattanooga.. | 3.60c |
| Chicago | 3.35c |
| Cincinnati | 3.45c |
| Cleveland | 3.10c |
| Detroit | 3.35c |
| Houston | 3.90c |
| Los Ang. | 3.95c |
| New York | 3.40c |
| Portland | 4.00c |
| Phila. *† | 3.15c |
| Pitts.** | 3.10c |
| San Fran. | 3.80c |
| Seattle | 4.00c |
| St. Louis | 3.45c |
| St. Paul | 3.545c |
| Tulsa | 3.95c |

**NO. 24 BLACK**

| | |
|---|---|
| Balt. *† | 3.75c |
| Boston | 4.70c |
| Buffalo | 4.20c |
| Chicago | 4.05c |
| Cincinnati | 4.05c |
| Clev. *** | 3.75c |
| Detroit | 3.95c |
| Los Ang. | 4.70c |
| New York | 3.55c to 3.65c |
| Phila. *† | 3.70c |
| Pitts. ** | 3.65c |
| Portland | 5.00c |
| San Fran. | 4.35c |
| Seattle | 5.00c |
| St. Louis | 4.25c |
| St. Paul | 3.79c |
| Tulsa | 4.45c |

**NO. 24 GAL. SHEETS**

| | |
|---|---|
| Balt.*† | 4.25c |
| Boston | 5.45c |
| Buffalo | 4.40c to 4.60c |
| Chicago (lc. del.) .. | 4.60c |
| Chicago (outside shipment) . | 4.35c to 4.60c |
| Cincinnati | 4.90c |
| Cleveland*** | 4.35c |
| Detroit | 4.40c |
| Houston | 5.40c |
| Los Ang. | 5.10c |
| New York | 4.25c |
| Phila. *† | 4.25c |
| Pitts.** | 4.20c |
| Portland | 5.50c |
| San Fran. | 5.00c |
| Seattle | 5.50c |
| St. Louis | 4.85c |
| St. Paul | 4.58c |
| Tulsa | 5.35c |

**BANDS**

| | |
|---|---|
| Baltimore | 3.50c |
| Boston | 4.015c-5.00c |
| Buffalo | 3.50c |
| Chattanooga.. | 3.30c |
| Chicago | 3.10c |
| Cincinnati | 3.35c |
| Cleveland | 3.10c |
| Det. 3/16-in. & lighter . | 3.30c |
| Houston | 3.65c |
| Los Ang. | 4.30c |
| New York | 3.40c |
| Philadelphia . | 3.00c |
| Pittsburgh | 3.10c |
| Portland | 3.50c |
| San Fran. .. | 3.75c |
| Seattle | 4.15c |
| St. Paul | 3.35c |
| Tulsa | 3.85c |

**HOOPS**

| | |
|---|---|
| Baltimore | 3.50c |
| Boston | 5.50c-6.00c |
| Buffalo | 3.90c |
| Chicago | 3.65c |
| Cincinnati | 3.90c |
| Cleveland | 3.65c |
| Det. No. 14 & lighter . | 3.80c |
| New York | 3.75c |
| Philadelphia . | 3.25c |
| Pittsburgh | 4.10c |
| Seattle | 5.15c |
| St. Paul | 3.90c |

**COLD FIN. STEEL**

**Rounds & Hexagons**

| | |
|---|---|
| Baltimore (c) | 3.30c |
| Boston | 3.50c |
| Buffalo | 3.15c |
| Chattanooga* | 3.85c |
| Chicago | 3.35c |
| Cincinnati | 3.80c |
| Cleveland | 3.40c |
| Detroit | 3.65c |
| Los Ang. (a) | 4.50c |
| New York | 3.50c |
| Philadelphia* | 3.40c |
| Pittsburgh | 3.35c |
| Portland (a) | 4.50c |
| San. Fran.(a) | 4.25c |
| Seattle (a) | 4.75c |
| St. Paul (a) | 3.85c |
| St. Louis | 3.60c |
| Tulsa | 4.75c |

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted.
(a) Rounds, hex. only.

**COLD ROLL. STRIP**

| | |
|---|---|
| Boston 0.100-in 500 lbs. lots | 5.30c |
| Buffalo | 5.65c |
| Chicago (soft) (b) . | 6.15c |
| Cincinnati | 6.10c |
| Clev. (b) | 5.95c |
| Detroit | 5.40c |
| New York | 5.05c |
| Phila. (c) | 4.85c |

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

# CARNEGIE BEAMS
## *in machinery construction*

The superiority and economy of welded or riveted structural steel is being recognized in a rapidly widening variety of uses and fields, particularly in the manufacture of machinery bases and frames.

The use of structural steel eliminates the capital investment, overhead and operating expenses of a pattern shop, patterns in storage and foundry. Instead you have only a small stock pile of selected rolled steel structural shapes, available for instant use and capable of being fabricated into an endless variety of machinery parts. The time between design and delivery is materially shortened. Rolled steel is homogenous, tough, and its strength is high in proportion to its weight and bulk.

Carnegie Beams have added a new impetus to this modern method of machine construction because the elimination of internal flange slope in these sections provides eight non-sloping faces for connections instead of four. The uniform flange thickness facilitates internal connections, thereby vastly increasing their utility and the neatness of the finished work.

Carnegie Beams merit the investigation of those interested in efficient and economical machinery construction.

◆◆◆

**CARNEGIE STEEL COMPANY**

*Subsidiary of United States Steel Corporation*

PITTSBURGH, PA.

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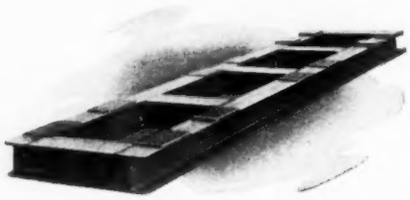
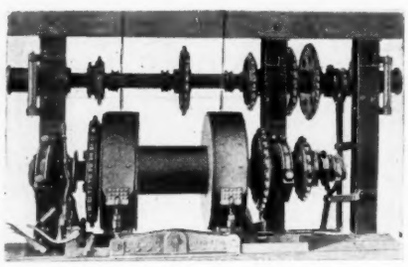


Carnegie Beams were used in the construction of this welded base for motor generator set manufactured by the Electric Machinery Manufacturing Company, Minneapolis, Minn. Note the neatness of construction details.



Popular with oil operators is this Gumbo Buster, manufactured by the American Well and Prospecting Company, Corsicana, Texas. The three vertical uprights are Carnegie Beams. Their straight parallel flanges permit simple connections.

## Mill Products

**Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 11.00c, del., Conn. for copper**

| | |
|---|---|
| **Sheets** | |
| Yellow brass (high) | 17.87½ |
| Copper, hot rolled | 20.75 |
| Lead, full sheets (cut ½c more) | 9.25 |
| Zinc sheet (100-lb. base) | 9.50 |
| **Tubes and Pipes** | |
| Seamless yellow brass (high) | 22.75 |
| Seamless copper | 23.00 |
| **Rods** | |
| Yellow brass (high, full turnings) | 16.12½ |
| Naval brass | 19.00 |
| **Anodes** | |
| Copper, untrimmed | 18.25 |
| **Wire** | |
| Yellow brass (high) | 18.37½ |

## Old Metals

**Dealers' buying prices, cents lb.**

| | |
|---|---|
| **Heavy Red Brass** | |
| New York | 7.25 to 7.50 |
| Chicago | 7.00 to 7.50 |
| Cleveland | 8.00 to 8.50 |
| St. Louis | 7.75 to 8.00 |
| **Heavy Yellow Brass** | |
| Cleveland | 5.00 to 5.75 |
| **Heavy Copper and Wire** | |
| New York | 8.50 to 8.75 |
| Boston | 8.50 to 8.75 |
| Chicago | 8.75 to 9.00 |
| Cleveland | 8.00 to 8.50 |
| St. Louis | 8.25 to 8.50 |
| **Red Brass Borings** | |
| New York | 6.75 to 7.25 |
| **Yellow Brass Tubing** | |
| Cleveland | 5.00 to 5.75 |
| **Light Copper** | |
| New York | 7.00 to 7.50 |
| Chicago | 6.75 to 7.00 |
| Cleveland | 7.50 to 7.75 |
| St. Louis | 8.00 to 8.25 |
| **Light Brass** | |
| Boston | 4.00 to 4.25 |
| Chicago | 4.50 to 5.00 |
| Cleveland | 3.50 to 4.00 |
| St. Louis | 4.50 to 4.75 |
| **Zinc** | |
| New York | 2.25 to 2.50 |
| Cleveland | 1.75 to 2.00 |
| St. Louis | 2.25 |
| **Aluminum** | |
| Clippings, soft, Cleveland | 12.00 to 13.00 |
| Clipp'gs, hard, Cleveland | 8.50 to 9.00 |
| Borings, Cleveland | 5.00 to 5.50 |
| Cast, Cleveland | 7.50 to 8.00 |
| Cast, Boston | 7.00 to 7.50 |
| Cast, St. Louis | 7.50 |

## Secondary Metals

| | |
|---|---|
| Remelt aluminum No. 12 | 14.00 to 15.00 |
| Brass ingot, 85-5-5-5 | 11.00 |

## Quicksilver Easy, $117-118

New York—Quicksilver is easy at $117 to $118 a flask for small spot lots.

# Metals

**Larger Sales Awaited as Vacation Period Closes—Prices Steady—Tin Supplies Increase**

**New York**—With the summer vacation period passed it is the hope of interests in the metal market that the new month will mark an improvement in demand. Despite the extreme dullness of the past few weeks prices have shown very little net change.

Tin is the only metal in which there has been any price action in the past week. It has moved uncertainly one way and then other with no decided change in trend. There has been a little improvement in demand, however. Extreme quietness in copper and zinc is partly due to the general business situation but partly also to the fact that users a short time ago bought well for late summer and early autumn consumption. Users of lead are not so well covered on their needs and it is believed that they will have to buy much more for September shipment.

**Copper**—Some business continues to go at 10.75c, Connecticut, and a little at 11.00c, but the total is extremely small. Export business as well as domestic has been light, but as foreign users are not as well covered as domestic, it is possible that export business may pick up first and serve as a sustaining factor.

**Zinc**—A very light business has been done in the past week at the spread of 4.25c to 4.30c, East St. Louis. The ore market shows slight change with prices from $30 to $32 a ton. Only a small tonnage has been sold.

**Tin**—After the price easiness of a week ago the market firmed up more suddenly that it had gone down, with a combination of resistance in the Far East and improved buying by consumers in this country. Domestic deliveries in August were 5695 tons, or smaller than expected. Stocks here increased 747 tons. The world's visible supply increased to 43,805 tons, a new high record. Straits tin shipments totaled 7849 tons.

**Lead**—New business has been mostly in small lots for quick shipment but this metal is in a much better statistical position than most others and so prices have been steady and without change.

**Aluminum**—New business continues small but prices of the importers as well as the domestic producers are firm.—*Daily Metal Trade.*

## Coke By-Products Steady; Benzol in Larger Demand

**New York**—Because of estimated low coking operations in September, predictions of higher prices for light oil distillates are freely made. Several distributors expect to advance quotations before Oct. 1 if the present improved demand continues. This is expected to appear first in benzol which is moving in greater volume with toluol. Current prices are firmer with less shading.

While the German nitrate syndicate has announced 1930-31 prices, announcement of sulphate of ammonia contract prices to the fertilizer trade remain in abeyance. Under the European agreement Poland will increase exports of sulphate of ammonia.

Naphthalene prices are unchanged and demand light. Some increase is noted for phenol from bakelite interests, but the market for this material is spotty and prices unchanged.

## Coke By-Products

| | Spot |
|---|---|
| **Per Gallon, Producers' Plants, Tank Lots** | |
| Pure benzol | $0.21 |
| 90 per cent benzol | 0.21 |
| Toluol | 0.30 |
| Solvent naphtha | 0.25 |
| Commercial xylol | 0.25 |
| **Per Pound at Producers' Plants in 250-Pound Drums** | |
| Phenol | 0.15 to 0.16 |
| **Per Pound at Producers' Plants** | |
| Naphthalene flakes | 0.04½ to 0.05½ |
| Naphthalene balls | 0.05½ to 0.06½ |
| **Per 100 Pounds Delivered** | |
| Sulphate of ammonia | $1.90 |

## Prices of the Week, Cents a Pound

| | Copper: Electro delivered | Copper: Lake delivered | Copper: Casting refinery | Straits Tin: New York Spot | Straits Tin: New York Futures | Lead N. Y. | Lead East St. L. | Zinc St. L. | Aluminum 98-99% | Spot Antimony | Ingot Nickel |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aug. 27 | 10.87½ | 11.07½ | 10.62½ | 30.00 | 30.25 | 5.50 | 5.35 | 4.27½ | 22.90 | 7.75 | 35.00 |
| Aug. 28 | 10.87½ | 11.07½ | 10.75 | 30.35 | 30.65 | 5.50 | 5.35 | 4.27½ | 22.90 | 7.75 | 35.00 |
| Aug. 29 | 10.87½ | 11.07½ | 10.75 | 29.87½ | 30.25 | 5.50 | 5.35 | 4.30 | 22.90 | 7.75 | 35.00 |
| Aug. 30 | 10.87½ | 11.07½ | 10.75 | ..... | ..... | 5.50 | 5.35 | 4.35 | 22.90 | 7.75 | 35.00 |
| Sept. 1—Holiday | | | | | | | | | | | |
| Sept. 2 | 10.87½ | 11.07½ | 10.75 | 29.75 | 30.12½ | 5.50 | 5.35 | 4.30 | 22.90 | 7.75 | 35.00 |

# Europe

**Railroad Orders Help British Values—German Mills Book Rail Order and Ships**

**Birmingham, Eng.**—Railroad companies, which for some time have been exercising great caution in placing orders, have awarded two important contracts. Approximately 1000 tons of steel will be used by the Furness Shipbuilding Co., Haverton Hill, for an order from the London Midland & Scottish railway in connection with the widening of the line at Mirfield. The other contract is awarded to the Cleveland Bridge & Engineering Co. Ltd., Darlington, by the Great Western railway, for the widening of the line between Paddington and Birmingham over a distance of 4½ miles.

Middlesbrough firms report a slightly better outlook in structural steel and it is hoped that shipbuilding specifications will improve within the next month or so. Structural engineers in the Midlands are still short of work and are buying little steel. The works of Barrow have had a fairly steady run and have practically completed their orders and the only department now employed is the hoop mill.

### Foreign Competition Cuts Deeply

The great obstacle to steel business is the intense foreign competition. It is on this account that so many steel works in South Wales are standing idle. Foreign prices leave a wide margin even when freight charges are added from the ports to such centers as Birmingham where a ton of steel cannot be brought from the coast under roughly £1 ($4.87) a ton. Removal of control from steel tube skelp has brought a decline in prices and Midland merchants are now quoting £6 ($29.22) a ton delivered. This is not the bottom price, however, for some German houses are anxious for orders and would take business at 2s 6d ($0.60) less. When trade is normal a good deal of skelp is imported into the Black Country district but some tube mills in the district are idle because manufacturers cannot afford to buy English skelp, and cycle and motorcycle factories use a considerable tonnage of German material. Midland traders are of the opinion that the attempt to arrest the slump of Continental prices is doomed to failure. Billets and bars are weak in price and although quotations are nominally the same, more favorable terms could be obtained for an attractive tonnage.

A feature of the pig iron trade this week has been a drop of 4s in the price of Middlesbrough No. 3 foundry. This is rather a heavy reduction but makers have been forced to it owing to heavy stocks and competition from Midland ironmakers in the Middlesbrough district and Scotland. Midland traders believe the displacement of trade is not likely to be heavy as Middlesbrough prices have been cut by merchants for some time. Pig is now obtainable at a lower figure than at any time since the war. It fell to £3 4s ($15.57) in January, 1928, but quickly took an upward turn. The new price of No. 3 is now £3 3s 6d ($15.45). Hematite is £3 11s ($17.28), so that the difference in values of Middlesbrough and hematite is similar to that in normal times before the war. Makers hope the autumn will bring a steady improvement in specifications.

The tone of the Midland iron trade has improved slightly since the holiday. Buying is still of a hand-to-mouth character but some forward supplies have been booked covering as far as two months ahead. These cases, however, are exceptional. The market is likely to be firmer as a result of the upward turn in furnace coke.

Only a month ago furnacemen were able to buy on favorable terms but since the holiday prices have appreciated 1s 6d ($0.36) and furnace coke at the ovens now costs 13s 6d ($3.27). Presumably this is the result of a generally firmer tendency in the fuel market, due to requisitions for heating purposes in the winter months. This will strengthen the hands of Midland furnacemen. Stocks are heavy and the present volume of trade is not sufficient to do anything towards liquidation. Owing to the existence of the Pig Iron Producers association and its arrangements with the merchants it is impossible to sell below the fixed prices, as has been done in the north of England. A few hopeful signs emerge in the finished iron trade of South Staffordshire. Marked bar mills reopened with good order books after the holiday, insuring employment for some time. One maker of iron strip declares that he has more unfilled orders at the end of this week than for a very long time. Other branches of the iron trade are extremely dull. Bar iron for nut and boltmaking is too expensive in view of the low price which merchants are offering for Continental material.

### Tin Plate Shipments Drop

The influence of the holiday surrounds the tin plate market. There was a big fall of shipments from Swansea last week, only 75,000 boxes being loaded, against 117,000 the previous week. The price of tin plates is unchanged at 18s ($4.39) basis. Australia and the Continent have sent in a few inquiries. A number of works are idle in accordance with the allotted quota of production arranged under the pooling scheme. Home consumers are buying on a hand-to-mouth basis.

Business is restricted in galvanized sheets and works have only sufficient to keep mills going from week to week. No forward booking is being arranged and the export market suffers severely on account of the political trouble in India. The records of shipments to that country this year are poor by comparison with previous years.

Figures of production issued by the National Federation of Iron &

## Germans Book 70,000 Tons of Rails; Six Tankships

**London** — (*By Radio*) — Steel business here and on the Continent shows little change from that of recent weeks. The end of the holidays in England brings a more hopeful feeling of larger orders in the fall. Competition from continental manufacturers is severe in the export markets. Some export inquiries for galvanized sheets are noted. Sheet mills in Scotland are fairly active. The market for tin plate is firm. STEEL's correspondent at Berlin reports Belgians are undercutting prices. German mills have booked orders for 70,000 tons of rails. The Standard Oil Co. of Turkey has contracted with German shipyards for six motor tankships. The report from the Paris correspondent states export business is stagnant, though domestic orders are fair. Prices are easy. The report from Brussels says the Belgian markets are quiet, and prices weak.

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**CLEVELAND CAP SCREWS**

Steel Manufacturers record a heavy fall in pig iron. No less than 28 furnaces have ceased to operate in the month ended July 31, leaving a total of 105 in blast. Pig iron output totaled 486,100 tons, which compares with 563,200 in June. Steel showed a slight improvement, production being 621,400 tons, compared with 600,100 tons a month ago. British exports in July totaled 303,444 and imports 198,788.

## French Steel Trade Feels Increasing Depression

**Paris**—The depression in trade is seriously increasing. Up to the present time activity has been satisfactory in comparison with the trend of business in foreign countries, especially in Germany and England, but the outlook for the coming months is dull. Signs of quiet are more numerous, and French domestic trade is suffering as a result of scarcity of orders on the export market. Building construction has diminished during recent months, due to financial difficulties. The actual cost of a house is high, and a large number of flats are vacant. Rents are more than five times those in prewar time, and salaries being rather less than that ratio, it is easy to realize the initial cause of this crisis. In addition, the wet weather which has characterized this summer has had a severe influence on the harvest, and it is certain that purchases will be much reduced during the next months.

Fortunately, execution of the program of works of general interest will keep active some branches of the industry for a long time. In Germany a similar decision has been taken in order to combat the crisis of unemployment, and it is said that the German State railway has remitted orders to the value of more than 350,000,000 marks. The German metallurgical industry has received big orders from Russia, Turkey and the Balkan states.

### Pig Iron Imports Heavy

In pig iron, sales are reduced, but imports remain heavy. During the first half of this year, 92,000 tons of foreign pig iron were bought in France, against 19,000 tons in the same period of 1929. Heavy tonnages of ferrosilicon are offered. Output is important, due to the weather, which maintains the rivers and streams at a high level. The position of bars remains unchanged, but prices are discussed. It is easy to obtain quotations for rods and bars for reinforced concrete at 580 francs in the East and 620 francs in the North. The price of beams as quoted by the comptoir seems heavy at 700 francs, and sales are decreasing.

It is said that a new steel plant will commence operating at the end of this year; it will produce special steel and tool steel by the Siemens-Martin and the electric process. This plant is located at Thionville and belongs to Societe Lorraine Miniere et Metallurgique.

Business is satisfactory in plates. Scrap is unsold, and prices are low; consequently, the actual cost of Siemens-Martin steel is lower than that of bessemer or basic steel.

## French Steelmakers See Much Future Business

**Washington**—French exports of iron and steel commodities during June registered a decided drop as compared to those of the preceding month, due in large measure to increased competition from the other steel producing countries of Europe, according to a cablegram received in the department of commerce from Acting Commercial Attache D. J. Reagan, Paris, France.

Domestic economic conditions in France, are, however, favorable for the iron and steel industry as in addition to the already steady demand for the products of this industry there is in prospect the accelerated program for rolling stock construction, which will involve the expenditure of 3 billion francs in each of the next two years, compared to the expenditure during recent years of 1 billion francs for this purpose. In addition to the foregoing the program of national industrial development of the present government, will involve the extraordinary expenditure of 20 billion francs during the next five years and should more than suffice at least to maintain the present rate of activity in iron and steel plants of the country.

Shipments of pig iron during June were larger than were those for May. This was, however, the only commodity which showed increased shipments over the preceding month, others registering losses ranging from 4 tons in the shipments of silicon sheets to 25,660 tons in foreign sales of bars.

# Current Iron and Steel Prices of Europe

| Dollars at Rates of Exchange, September 2 | *British* Gross Tons U. K. Ports | | *French* Metric Tons Channel Ports | | *Belgium and Luxemburg* Metric Tons Channel Ports | | *German* Metric Tons Rotterdam or North Sea Port | |
|---|---|---|---|---|---|---|---|---|
| **Export Prices f. o. b. Ship at Port of Dispatch—By Cable** | | £ s d | | £ s d | | £ s d | | £ s d |
| **PIG IRON** | | | | | | | | |
| Foundry No. 3, Silicon 2.50-3.00 | $15.46 | 3 3 6 | $14.61 | 3 0 0 | $14.61 | 3 0 0 | $14.61 | 3 0 0 |
| Basic-bessemer | 15.95 | 3 5 6 | 13.39 | 2 15 0 | 13.39 | 2 15 0 | 13.39 | 2 15 0 |
| Hematite, Phosphorus 0.02-0.05 | 17.29 | 3 11 0 | 24.82 | 630* | ..... | ..... | 17.78 | 3 13 0 |
| **SEMIFINISHED STEEL** | | | | | | | | |
| Billets | $28.85 | 5 18 6 | $21.18 | 4 7 0 | $21.18 | 4 7 0 | $22.65 | 4 13 0 |
| Wire rods | 41.40 | 8 10 0 | 30.44 | 6 5 0 | 30.44 | 6 5 0 | 31.66 | 6 10 0 |
| **FINISHED STEEL** | | | | | | | | |
| Standard rails | $40.18 | 8 5 0 | $31.66 | 6 10 0 | 31.66 | 6 10 0 | $32.14 | 6 12 0 |
| Merchant bars | 1.74c | 8 0 0 | .99c | 4 10 0 | .99c | 4 10 0 | .99c | 4 10 0 |
| Structural shapes | 1.68c | 7 15 0 | 1.06c | 4 16 0 | 1.06c | 4 16 0 | 1.02c | 4 13 0 |
| Plates, ship, bridge and tank | 1.79c | 8 5 0 | 1.19c | 5 8 6 | 1.19c | 5 8 6 | 1.30c | 5 18 0 |
| Sheets, black, 24 gage | 2.17c | 10 0 0 | 2.09c | 9 9 9 | 2.09c | 9 9 9 | 2.20c | 10 0 0 |
| Sheets, galvanized, 24 gage, corrugated | 2.47c | 11 7 6 | 2.46c | 11 3 9 | 2.46c | 11 3 9 | 3.08c | 14 0 0 |
| Bands and strips | 2.17c | 10 0 0 | 1.10c | 5 0 0 | 1.10c | 5 0 0 | 1.29c | 5 17 0 |
| Plain wire, base | 2.06c | 9 10 0 | 1.46c | 6 12 6 | 1.46c | 6 12 6 | 1.43c | 6 10 0 |
| Galvanized wire, base | 3.04c | 14 0 0 | 1.57c | 7 2 6 | 1.57c | 7 2 6 | 1.67c | 7 12 0 |
| Wire nails, base | 2.39c | 11 0 0 | 1.38c | 6 5 0 | 1.38c | 6 5 0 | 1.49c | 6 15 0 |
| Tin plate, base box 108 pounds | $ 4.38 | 0 18 0 | .... | ..... | ..... | ..... | $ 8.76 | 1 16 0 |

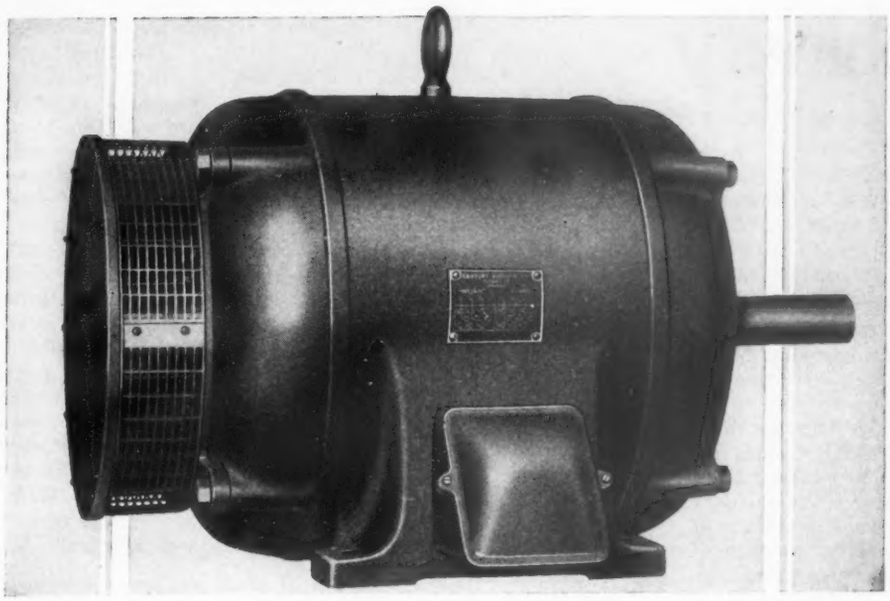
*France

| **Domestic Prices at Works or Furnace—Last Reported** | | | Francs | | Francs | | Marks | |
|---|---|---|---|---|---|---|---|---|
| Foundry No. 3 Pig Iron, Silicon 2.50—3.00 | $15.46 | 3 3 6 | $19.31 | 490(2) | $16.80 | 600 | $19.84 | 83 |
| Basic pig iron | 15.95 | 3 5 6 | 20.69 | 525(1) | 13.44 | 480 | 21.15 | 88.50 |
| Furnace coke | 3.29 | 0 13 6 | 6.62 | 168 | 5.74 | 205 | 5.14 | 21.50 |
| Billets | 28.85 | 5 18 6 | 22.26 | 565 | 21.00 | 750 | 28.08 | 117.50 |
| Standard rails | 1.79c | 8 5 0 | 1.46c | 810 | 1.62c | 1,245 | 1.47c | 136 |
| Merchant bars | 1.74c | 8 0 0 | 1.18c | 655 | 1.07c | 820 | 1.48c | 137 |
| Shapes | 1.84c | 8 10 0 | 1.26c | 700 | 1.18c | 910 | 1.45c | 134 |
| Plates, ship, bridge and tank | 1.95c | 9 0 0‡ | 1.46c | 810 | 1.33c | 1,025 | 1.65c | 153 |
| Sheets, black, 24-gage | 2.28c | 10 10 0 | 2.72c | 1,510 | 2.54c | 1,950 | 1.36c | 126 |
| Sheets, galvanized 24 gage, corrugated | 2.58c | 11 17 6 | 3.52c | 1,955 | 2.60c | 2,000 | 3.67c | 340 |
| Plain wire | 2.06c | 9 10 0 | 2.03c | 1,125 | 2.15c | 1,650 | 2.34c | 217 |
| Bands and Strips | 2.17c | 10 0 0 | 1.33c | 740 | 1.43c | 1,100 | 1.72c | 159 |

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.17) f. o. b. Ferromanganese £19 6s 0d ($93.99) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 0s 0d ($58.44) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

THEY KEEP A-RUNNING



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# Machinery

EASTERN machine tool builders and dealers are inclined to be somewhat more optimistic this week than are those in the Middle West. The big news of the week, and possibly for the year, is the large order placed by the Ford Motor Co. with the Bullard Co., Bridgeport, Conn. Activity is also becoming apparent in the grinding machine business. Russian buying continues, and shipment of several million dollars worth of equipment to Russia is under way from Staten Island terminals. The increasing volume of inquiry continues, but buying is scattered.

**New York**—Inquiry for machine tool equipment is slightly more active. Most dealers and builders agree on this fact, but note a more spotty situation as to orders. The State of New York has closed on a list of eight tools for the Auburn prison, including lathes and milling machines. American Locomotive Co. has closed on a list for its Auburn subsidiary, mostly heavy equipment, including a boring mill, lathes and radial drill. The business totaled around $140,000. The remainder of the list for the Schenectady plant is expected to be closed in about a week. One prominent dealer reports the best 10 days in many months. Sharing liberally in the Auburn volume, the same interest sold a 28-foot lathe, radial drill, shaper, drill press, brakes and other tools. This company is almost alone, however, in reporting a pronounced improvement.

August showed a slight, but spotty, improvement over the previous month. Several lists issued stand out in bold relief after months of curtailed buying and the withdrawal of some pending business. Current fresh inquiry is of the more active type, and, while no large lists are included, sentiment is improved. Business is still limited to one or two units at a time.

Grinding machinery demand is unchanged, August being a shade better than July with some builders. Export business experienced a flurry and Amtorg continues to take equipment. Shipments on the first of several million dollars worth of equipment on Amtorg summer buying have started from Staten Island terminals.

The biggest piece of news which has emanated from the machine tool industry in many months concerns the large order for automatic chuckling machines and accessories just placed by the Ford Motor Co. with the Bullard Co., Bridgeport, Conn. This report is confirmed by the Bullard Co. and, while the number of units is not revealed, the order is said to total over $250,000—making it in all probability the largest machine tool transaction this year as far as the automotive industry is concerned. The report has it that this new equipment will replace at the River Rouge plant similar but older equipment, which will be transferred to Ford plants abroad.

**Worcester, Mass.**—Evidence of the release of many purchasing schedules heretofore held up, was seen in the market this week. Russian contracts are being let, inquiry on grinders has shown more activity and the American Locomotive Co. has placed awards for drills and lathes. Locally, many manufacturers are beginning to place long deferred orders and while the upturn is nothing momentous, purchasing actually has begun.

**Pittsburgh**—August machine tool sales proved disappointing, delay being encountered in the closing on a number of projects. Inquiry has been fairly well maintained the past month and considerable work is pending, but buyers are slow to close. Most inquiries call for only a few tools at a time and are fairly well distributed. Railroads, however, continue to be uninterested in new equipment and have out but few active inquiries. Steel companies are light buyers of standard tools but continue to be interested in special equipment having cost-saving possibilities.

Bids are in on army engineers' inquiry, Pittsburgh delivery, for a 20-inch lathe and 16-inch stroke shaper.

**Cleveland**—Labor day had been set by a number of machinery builders in this district as a possible turning point in the affairs of the machine tool business. The time is too short as yet to determine whether this prediction was well founded, but reports generally indicate a continuation of the heavy inquiry and scattered orders of last week. One large company which had previously announced the tentative date of resumption of production in their machine tool division as Sept. 2, has carried out this plan, but on a somewhat curtailed schedule on a trial plan covering one month only. Continuation or expansion of this schedule will depend upon a fair improvement in the metalworking business during the month of September. It is reported that one company has closed on considerable Russian business which has been pending for some time during credit negotiations.

The employment situation continues to be discouraging, with the supply of skilled workers plainly exceeding the demand. A number of organizations are striving to hold their best men, either by short time employment or by promises of resumption between now and Oct. 1.

**Chicago**—With the beginning of September, vacations should be pretty well over and with the return of "key men" to their desks the closing of some pending business is to be expected. Present sales are confined to a single machine here and there, although there is encouraging evidence of more people shopping around. There has been no railroad purchasing and there seems to be no present indication of when they will begin equipment buying. Likewise, this is true of industrials.

The Illinois Steel Co. order still pends and Majestic Household Utilities Inc., confines itself to only occasional purchases now, largely in the form of special machinery, in cleaning up its equipment program. The city of Chicago closed this week on a lathe and milling machine for a local pump station. School board directors will meet soon on machinery for the new Austin high school.

## Fuel Briquet Production Exceeds 1,000,000 Tons

Production of fuel briquets in the United States exceeded 1,000,000 tons in 1929 for the first time in the history of the industry, according to a report of the bureau of mines, Washington, published in "Fuel Briquets in 1929," by O. E. Kiessling and J. M. Corse. The sharp increase in the output, 28 per cent over 1928, at a time when supplies of anthracite and bituminous coal were ample, is taken as an indication of the expanding market for briquets. World production of the briquetted fuel is now about 56,000,000 metric tons a year with Germany producing more than 80 per cent of the total. At present the United States contributes approximately 2 per cent of the world production with a domestic output of 1,212,423 tons which has a value of $9,515,205.

# Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

## New England

NEW HAVEN, CONN.—Universal Metal Weatherstrip Corp., 201 Greene street, has been incorporated with 100 common shares by I. O. Moseberg.

NEW LONDON, CONN.—Connecticut college for women, Mohegan avenue, has awarded contract to John Mondelci & Co., 225 Coleman street, for a 1-story, 45 x 70-foot boiler house. Cost is estimated at $40,000.

GARDINER, ME.—Hollingsworth & Whitney Co. is considering additions and alterations to its boiler house, at a cost of about $40,000.

PRESQUE ISLE, ME.—City will develop a 270-acre airport on the Montreal-Halifax air route. Local citizens have raised $40,000 for construction.

GREAT BARRINGTON, MASS.—Hubbard Engineering Co., Middletown, Conn., manufacturer of marine motors, has acquired and will remodel car barns of the former Berkshire street railway.

WARE, MASS.—B. G. Luther Co., Worcester Mass., manufacturer of woodworking machinery, will move to a location in the Ware woolen plant by Sept. 1.

WAREHAM, MASS.—Wareham Mfg. Co., J. J. Beaton president, is reconstructing its plant for the manufacture of horseshoes, in South Wareham. Cost is estimated at about $50,000.

NASHUA, N. H.—White Mountain Freezer Co., recently noted as having suffered damage by fire to its plant, has begun erection of a 1-story addition. Cost is estimated at $25,000 with equipment. (Noted May 15.)

## New York

BROOKLYN — Lewis Roe, 1050 DeKalb avenue, manufacturer of polishing and plating equipment, is seeking plant site for expansion. Additions will be made to the line of manufacture, including nickel, copper and brass anodes.

BROOKLYN — Cameron Machine Co., 61 Poplar street, manufacturer of winding, coiling and rolling machinery, has purchased a site at 94 Fulton street as an addition to present site holdings in that vicinity.

BUFFALO—Flexo-Print Appliances Corp. has been incorporated with $100,000 and 4000 no par shares by Slee, O'Brian, Hellings & Ulsh, attorneys, Iroquois building, to deal in addressing machines.

MOUNT MORRIS—Mount Morris Iron & Metal Co. Inc., care of J. O. Moore, Liberty Bank building, Buffalo, N. Y., whose incorporation recently was noted, will operate a plant for the manufacture of a line of metal products. (Noted July 17.)

MT. VERNON—Pruser Equipment Corp. has been incorporated with $20,000 capital by Morgan, Bagg & Parsons, to deal in heating apparatus.

NEW YORK—M. Nathans has been incorporated with $20,000 capital by Bregman & Bregman, 10 East Fortieth street, to deal in machinery.

NEW YORK—Ideal Auto Ventilating Fan Co. has been incorporated with $20,000 capital by M. Schulberg, 55 Graham avenue, Brooklyn, N. Y.

## Pennsylvania

BLOOMSBURG—Local plant of the American Car & Foundry Co., 30 Church street, New York, manufacturer of cars, valves, fittings and castings, recently was severely damaged by fire. Loss is estimated at $500,000.

NEW CASTLE—Burton Explosive Inc., J. S. Burton president, has purchased a 400-acre site west of here and will erect a plant capable of producing 18,000,000 pounds of dynamite annually.

PHILADELPHIA—Carolina Sheet Metal Works Inc., 3009 Chestnut street, has leased a 1-story plant now under construction at Forty-second and Samsom streets, containing 8000 square feet of floor space. Building will be used for manufacturing and showroom.

PITTSBURGH—Inland Waterways Aviation Corp. has been incorporated with $30,000 capital by William L. Mitchell, 1708 Clark building, to manufacture and deal in aircraft.

## New Jersey

CAMDEN—Continental Can Co., 1016 East Water street, Syracuse, N. Y., recently noted as planning a new plant here, will soon call for bids for its construction. Estimate of the cost is now placed at near $1,000,000. (Noted July 10.)

EAST ORANGE—Federal Welding Works Inc. has been incorporated

## Link-Belt Co., Pacific Division, Occupies New Plant

*Pacific division of the Link-Belt Co., Chicago, has moved into its new plant and office, located on Paul avenue near Bayshore highway, San Francisco, from its old plant in another section of the city. This latest addition to Link-Belt's system of plants consists of an office building, warehouse and manufacturing unit, the latter containing a machine shop, steel shop and plant office*

with 2500 common shares by Max Rosenberg, 262 North Walnut street, to engage in electric welding.

HARRISON — Driver-Harris Co., Middlesex street, manufacturer of wire, will receive bids about Oct. 15 for a plant addition of one and two stories. J. A. Finegan, 776 Broad street, Newark, N. J. is architect. Cost is estimated at $250,000. (Noted April 24.)

HOBOKEN—Cornell & Underhill, 311 Spring street, New York, manufacturers of pipes and fittings, have leased a 2-story plant to be erected on the block bounded by Thirteenth, Fourteenth, Jefferson and Madison streets.

NEWARK—Paramount Radio & Electric Mfg. Co. has been incorporated with $50,000 capital by James F. Mooney, 181 North Fifth street.

NEWARK—National Air Transport Inc., 420 Lexington avenue, New York, plans to build a hangar and shops at the Newark airport. Cost will approximate $100,000.

NEWARK — Peerless Soda Fountain Service Co., manufacturer of soda fountain equipment, has leased a plant unit of 5000 square feet of floor space, at 10 North Third street.

## Ohio

CLEVELAND—Cleveland Smelting Co. has been incorporated with 250 no par shares by Edwin G. Linderme, 2838 Hampshire road.

CLEVELAND—L. R. Oatey Co., 5510 Wadsworth avenue, has been incorporated with $25,000 capital by Lee Roy Oatey to manufacture automobile accessories.

CLEVELAND — Cleveland Steel Products Corp., 7306 Madison avenue, manufacturer of oil burners, may build a 1-story, 78 x 90-foot plant. George S. Rider Co., Marshall building, is architect.

CLEVELAND—Allied Oil Co., F. R. Newman secretary, Guarantee Title building, has awarded contract to Masters & Mullen Construction Co., Rose building, for a 24 x 50-foot boiler house and a 24 x 40-foot pumping house, on East Fortieth street. Cost is estimated at $40,000.

COLUMBUS—J. E. Morris, 139 East Third avenue, has a building permit for a 1-story machine shop addition. Owner will build. Cost is estimated at $2500.

HAMILTON—Glen C. Ryman plans to build an addition to his machine shop at Fairview and Noble avenues.

MIDDLETOWN—Ohio Corrugated Culvert Co. has a building permit for a 1-story plant unit to be erected on the north side of Penfield avenue between Baltimore and Young streets. F. C. Williams Inc. is the contractor. Estimated cost, $8000.

TOLEDO—Modern Hardware Mfg. Co., 1903 Tremainsville road, whose incorporation recently was noted, will manufacture a patented sash lock. (Noted Aug. 14.)

TOLEDO—Hickok Oil Corp., in cooperation with Pure Oil Co., 35 East Wacker Drive, Chicago, will undertake an improvement program costing $20,000,000. A refinery, marine facilities and a fleet of lake vessels are included in the plans.

WILMINGTON—Wilmington Castings Co. has acquired the Washington Metal Products Co., Washington Court House, O., and is moving equipment of the latter here.

YOUNGSTOWN—Board of directors, Mahoning valley sanitary district, 901 City Bank building, will receive bids until Sept. 19 for pumping equipment, motor driven, and auxiliary electrical equipment for Meander creek improvements.

## Indiana

ANGOLA—Gafill Oil Co., South Bend, Ind., has awarded contract for a machine shop and service station at Martha street. Cost is estimated at over $40,000.

## Michigan

BATTLE CREEK—United Steel & Wire Co., Lowell Genebach secretary, manufacturer of wire and sheet steel products, contemplates construction of a new warehouse and manufacturing plant to allow for expansion of operations. Plans will not mature until next spring.

DETROIT — Aridice Corp., 2649 Forest avenue east, has been incorporated with $20,000 capital by John M. Kerr to develop and manufacture appliances and materials for the production of artificial ice.

DOWAGIAC—Lenert Aircraft Co., William Lenert president, Pentwater, Mich., will move here. Company is experimenting with an all-metal plane and will start production.

FLINT—Ellis Products Co., 3417 Fleming road, has been incorporated with $20,000 capital by Warren C. Ellis to manufacture and sell window screens, weather stripping and metal parting strips.

GRAND RAPIDS—Hot Shot Inc., 658 Richmond street northwest, has been incorporated with 2000 no par shares by Englebert J. Vogt to manufacture and deal in electrical and mechanical devices.

WHITE PIGEON—C. M. Lower Incubator Co. has been incorporated with $10,000 and 400 no par shares by Claude M. Lower, Sturgis, Mich., to manufacture and sell poultry incubators.

WYANDOTTE—Wyrick Engineering Co., 2959 Biddle avenue, has been incorporated with $100,000 capital by Clayton E. Wyrick to deal in wedgelocks and compensators.

## Illinois

CHICAGO — Kroh Wagner Mfg. Corp., 409 North Paulina street, has been incorporated with 100 no par shares by Joseph Kroh, to deal in cold-rolling machines.

CHICAGO—Weil Metal Specialties Inc., 330 South Wells street, has been incorporated with 5000 no par shares by Michael Gluck to engage in a general manufacturing and merchandising business.

CHICAGO—M. Caffenlo, 5226 West Sixty-third street, has a building permit for the construction of a hangar, 20 x 160 feet, at a cost of about $26,000. J. V. Koscher, 6405 South Halstead street, is architect.

CHICAGO—Handco Mfg. Co., 2451 West Harrison street, has been incorporated with $5000 capital by Sinden & Hassel, 139 North Clark street, to deal in refrigerating and engineering appliances.

FREEPORT — Stover Mfg. & Engine Co. has acquired the Swartz Mfg. Co. Inc., manufacturer of automotive engine pistons and will expand the plant facilities of the latter. R. M. Bennethum is president of the Stover company.

PARIS—Cummings Car & Coach Co., 111 West Monro street, Chicago, plans to reconstruct the boiler house at its plant here, recently damaged by fire, with a loss to structure and equipment of $15,000.

## Southern States

FULTON, ALA.—Scott Lumber Co. will require motors for installation in the proposed saw mill and lumber plant to be built to replace its plant recently destroyed by fire at a loss of about $200,000.

WILMINGTON, DEL. — Delaware Aviation Corp. has been incorporated with 2000 common shares by Richard D. Morgan, New Castle, Del., to deal in airplanes.

WILMINGTON, DEL.—Automatic Simplex Register Corp. has been incorporated with 500 common shares by Corporation Trust Co. to deal in checking and counting machines and other devices.

WASHINGTON—Navy department, bureau of yards and docks, has rejected bids for improvements to brass foundry and will receive new bids.

AUGUSTA, GA.—Allied Engineers Inc., Gas & Electric building, Atlanta, Ga., has the contract for a 2-story addition to a building of the Georgia Power Co.

LOUISVILLE, KY.—Automatic Safety Signal Gate Co. has been incorporated with $25,000 capital by Carl R. Webb, Normandie village.

LOUISVILLE, KY.—Mengel Body Co., 2300 Fourth street, has a building permit for boiler room addition. Estimated cost, $2000.

NATCHITOCHES, LA.—City has awarded contract to P. Prudhomme for an 80 x 100-foot hangar unit at the municipal airport.

NEW ORLEANS—Flexlume Corp., 1100 Military road, Buffalo, N. Y., has acquired the Louisiana Neon Co. and will build a plant here at a cost of about $100,000.

JACKSON, MISS.—Mississippi Power & Light Corp., Gulfport, Miss.,

is reported to be planning a power substation here.

LAUREL, MISS.—Continental Electric & Mfg. Co., manufacturer of electrical equipment and supplies, will build a 2-story plant, 40 x 165 feet. Cost is estimated at $50,000, with equipment.

RALEIGH, N. C.—Electrical Equipment Co. Inc., 406 West Davis street, is reported to be in the market for motors of 50 and 60 horsepower.

MEMPHIS, TENN.—Virgina Bridge & Iron Co., recently noted as planning plant expansion, is building a unit 40 x 130 feet, to be completed by Sept. 15. Unit will be used as an extension of the present punch room. A. B. Davis is manager. (Noted Aug. 28.)

RICHMOND, VA.—Virginia Electric Light & Power Co. will build a 3-story warehouse at a cost of about $180,000. Unit will be 100 x 110 feet. John T. Wilson Co. Inc., Mutual building, has been awarded the contract.

## Missouri

KANSAS CITY—Longren Aircraft Inc. has been incorporated with $100,000 capital by L. Murphy, 1228 West Sixty-second street.

KANSAS CITY — Sheffield Steel Corp., subsidiary of American Rolling Mill Corp., recently noted as planning a bolt and nut mill here, has a building permit for a $25,000 plant addition at 7000 Independence road. (Noted May 29.)

NORTH KANSAS CITY — Corn Products Refining Co., Kansas City, Mo., will begin work in September on construction to include a power plant addition. One 4000-kilowatt turbine will be installed. A warehouse unit 100 x 150 feet will be built. Cost of entire project is estimated at $250,000.

ST. LOUIS—Warehouse occupied by United Iron & Metal Co., 2412 Sheridan avenue, recently was damaged by fire.

ST. LOUIS—Board of education, 911 Locust street, has closed bids for the construction of a 4-story shop building, 100 x 150 feet, estimated to cost about $250,000.

## Arkansas

HELENA—Allen Machine Shop will rebuild its machine shop at Arkansas and Chickasaw streets, recently destroyed by fire. Loss to be replaced, $30,000.

SILOAM SPRINGS—City is having plans prepared for a power plant on the Illinois river. V. H. Cochrane, Wright building, Tulsa, Okla., is engineer. Cost is estimated at $200,000.

## Oklahoma

BOISE CITY—Atchison, Topeka & Santa Fe railway, Amarillo, Tex., W. W. Kelly chief engineer, will build a roundhouse and mechanical shops on a site recently purchased here.

TULSA—Midco Oil Well Tool Co., Tuloma building, advises through W. J. Ross, president, that the company will be in the market in the near future for lathes, milling machines, drill presses, power hack saws, line shafts, hangars, electric motors, grinders, small boring mill, vices and other equipment. (Noted Aug. 28.)

## Texas

BEAUMONT—City advises through F. L. Bertschler, airport director, that a hangar unit at least 80 x 100 feet will be built in connection with a new airport development. (Noted Aug. 21.)

## Wisconsin

OSHKOSH—Wisconsin Axle Co., Walter F. Rockwell vice president and general manager, will construct immediately a 1-story plant addition, 100 x 150 feet, to be used as a machine shop. Construction is to be completed by Oct. 15.

MAUSTON—La Crosse Machinery Co. has been incorporated with $10,000 capital to operate a warehouse for farm implements and supplies.

MILWAUKEE—City is considering the purchase of a tract of land adjoining Maitland field for about $1,400,000. Air, rail and water terminus would be established.

MILWAUKEE—Triple A File Co., manufacturer of a special file for automotive use, is incorporating under the same name, with 500 common shares, and additions to plant and equipment have been started. E. A. Anheuser is president and general manager.

## Minnesota

DULUTH—Northern Pacific railway, 31 Nassau street, New York, has awarded contract to George H. Lounsbury & Son for extensions to its roundhouse. Estimated cost, about $42,000.

ST. CLOUD—Gopher Thresher & Mfg. Co., 2523 Hiawatha avenue, Minneapolis, has provided for expansion by purchasing the motor plant here of the former Pandolpho Mfg. Co.

## Iowa

DECORAH—Tatro Brothers Inc. has leased a new plant here for expansion. Lyle Tatro is president.

## Colorado

DENVER—Western Flying Service Inc., Denver municipal airport, has been incorporated with $100,000 capital by Walter B. Higley to manufacture and deal in airplanes and to train students.

## Wyoming

CHEYENNE—Union Pacific railroad, G. J. Adamson chief engineer, 1416 Dodge street, Omaha, Nebr., plans a new freight yard here, to include car repair shops.

## Pacific Coast

BERKELEY, CALIF.—Philadelphia Quartz Co. of California Inc., Sixth and Grayson streets, has awarded contract to W. E. Lyon, 354 Hobart street, Oakland, Calif., for plant extensions. Cost, with equipment, is estimated at $85,000.

BERKELEY, CALIF. — University of California has closed bids for the construction of an engineering building at a cost of about $685,000. G. W. Kelham, 315 Montgomery street, San Francisco, is architect. H. J. Brunnier, Sharon building, San Francisco, is engineer.

LOS ANGELES—Laboratory and warehouse unit costing $750,000 will be erected at Second and San Pedro streets by Brunswig Drug Co., 501 North Main street. Structure will be 150 x 250 feet, five stories.

SAN FRANCISCO—R. L. Roberts Ltd. has been organized here and has located at 360 Bryant street. Company will manufacture Ra-Lumin-Ex, an aluminum alloy. Offices are at 965 Russ building.

SAN FRANCISCO—David Round & Son, Henry street and Pennsylvania railroad, Cleveland, has under construction a plant unit on Bay Shore highway. First unit will be at least 60 x 100 feet. Company manufactures chain hoists and chains. Austin Co. of California has the contract.

TORRANCE, CALIF.—General Petroleum Corp., 310 Sansome street, San Francisco, will install power equipment and construct a boiler house for a proposed new oil refinery here. Entire project will cost nearly $10,000,000.

## Dominion of Canada

EDMONTON, ALTA.—Electric light department, William Barnhouse superintendent, has plans for a new substation. Bids will be called for soon. Structure is to be of two stories, 40 x 50 feet. Estimated cost, $40,000.

HALIFAX, N. S.—Mayor is reported to be in communication with an automobile manufacturer of Liverpool, Eng., who is contemplating establishment of a manufacturing plant with an annual turnover of $5,000,000.

BRANTFORD, ONT. — Merchants Specialty Mfg. Co. Ltd. has been incorporated with 5000 no par shares by John H. McIntosh, 11 McMaster street, Toronto, Ont., to manufacture

and deal in scales, slicers, and refrigeration equipment.

HAMILTON, ONT.—Chadwick Electric Co. Ltd. has been incorporated with $100,000 capital by Thomas H. Simpson and Frederick R. Murgatroyd, to manufacture and deal in electric machinery and apparatus.

NORTH BAY, ONT.—Board of education will build a 3-story, 35 x 110-foot vocational school building, including four shops, on Klock avenue. Total expenditure will amount to approximately $225,000. S. B. Coon & Son, 4 St. Thomas street, Toronto, Ont., recently closed bids for construction work.

PORT ARTHUR, ONT.—Consolidated Chromium Corp., care of Mineral Research Corp., 120 Broadway, New York, will have plans prepared later in the year for an ore concentrating plant and power development north of here. G. M. Brown is engineer.

TORONTO, ONT.—Dominion Metalores Ltd. has been incorporated with 10,000 no par shares by Alexander Bissett, 233 Concord street, to manufacture and deal in iron, steel, copper, nickel and other metals.

TORONTO, ONT.—Canadian Lock & Key Shops Ltd. has been incorporated with $40,000 capital by Angus C. Dand, 172 Northcliffe boulevard, to manufacture and deal in hardware, locks, keys and metal products.

TORONTO, ONT. — Adjusto-Roll Screens Ltd., whose incorporation recently was noted, advises through R. W. Godson, 407 Concourse building, that the company will manufacture a roller window screen, leasing a plant for the present and later building or purchasing a plant. Company is interested in data on power and draw presses, lathes, power shears, electric spot welding outfits, punch presses, and other equipment. Would also like data on tubing machines and the following materials: sheet steel, brass, aluminum, copper in 20 to 30-gage, light weight tubing from ¾ to 2-inch sizes, and bronze screen wire. Companies doing press work or stamping work on the custom basis are to communicate. (Noted Aug. 7.)

WELLAND, ONT.—Pyramid Mfg. Co. Ltd. has been incorporated with 10,000 no par shares by Robert B. Law and Lynn B. Spencer to carry on the business of manufacturer and deal in steel and metal products.

CHICOUTIMI, QUE.—J. Vezine Ltd. will build a body manufacturing plant here at a cost of about $60,000. Bids will be called immediately. H. Laberge, 140 St. John street, Quebec, Que., is architect.

MONTREAL, QUE. — Miller Brothers & Sons Ltd., 120 Dalhousie street, manufacturer of cranes and derricks, is having plans prepared for a 3-story plant, 100 x 140 feet. J. M. Miller, 648 Dorchester street west, is architect.

MONTREAL, QUE.—D. K. McLaren Ltd. has been incorporated with $50,000 capital by M. T. Darragh, 3661 Ste. Famille street, to manufacture and deal in belting, machinery and mill and factory apparatus and supplies.

MONTREAL, QUE. — Fisher Refrigeration Ltd. has been incorporated with $300,000 and 25,000 no par shares by John P. Callaghan, 132 St. James street west, to manufacture and deal in stoves, ranges, boilers, oil burners and refrigerators.

WESTMOUNT, QUE.—Council, Arthur T. Bell secretary-treasurer, plans improvements to the municipal power plant, at a cost of about $160,000.

SASKATOON, SASK.—International Harvester Co. Ltd., Pacific avenue, has obtained a building permit for a warehouse unit adjoining its offices. Building will be 112 x 340 feet and will cost approximately $50,000. Shannon Bros. have the contract for its construction.

# New Trade Publications

TOOLS—A catalog has been issued by the Stanworth Tool Mfg. Co., Lebanon, Ind., covering its interchangeable taper drive and straight shank tools. It is illustrated.

AFTERCOOLERS—Pennsylvania Pump & Compressor Co., Easton, Pa., has issued a bulletin describing its aftercoolers for use with compressed air equipment. Illustrations and diagrams supplement the description.

GAS UNIT HEATERS—Buffalo Forge Co., Buffalo, describes in a current bulletin its gas unit heaters for industrial installations. Illustrations show its construction and the application of the gas unit to produce heat.

PROTECTIVE COATINGS—Headley Emulsified Products Co., Philadelphia, in two current bulletins describes its waterproofing and dampproofing compounds and its asphalt-base aluminum coating.

ALUMINUM—Apex Smelting Co., Chicago, taking as a text the symbolic aluminum figure surmounting the Chicago Board of Trade building, calls attention in a current bulletin to the suitability of aluminum to architectural ornamentation.

STOKERS—Whiting Corp., Harvey, Ill., has mailed to the trade a binder containing all the current literature available on the Whiting stoker, including several new pieces recently printed. The binder and contents serve as a catalog for those interested. It is well illustrated and contains diagrams of installations.

BOXCAR LOADER—Stephens-Adamson Mfg. Co., Aurora, Ill., has issued a bulletin on its loader for efficient handling of bulk materials into railroad boxcars. Diagrams, illustrations and specifications supplement the descriptive matter. It is made in standard and heavy-duty types.

ANALYSIS METHODS—Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturer of electroplating and polishing supplies and equipment, has put into book form for free distribution its simplified methods of analyzing plating solutions. The company for many years has been giving instruction at its laboratories to platers who desired to learn analysis.

ELECTRICAL EQUIPMENT—General Electric Co., Schenectady, N. Y., has issued a number of bulletins on various items of its equipment. They include centrifugal compressors, arc welding of structural steel, cable-reel equipment, haulage locomotives, motors, thermostat switches, motor-generator sets, resistors, brazing furnaces, and control equipment.

PUMPS—Chicago Pump Co., Chicago, has published a bulletin covering its line of centrifugal pumps adapted to sewage disposal and water supply for municipalities. It shows vertical pumps for open and closed shafts, typical layouts, installations, horizontal pumps of single and multistage for water supply, gas engine driven pumps for auxiliary use and bilge pumps for drainage.

AUTOMATIC ARC WELDING—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has published a bulletin on automatic arc welding, containing welding data and describing welding applications. Comparison is given of automatic and hand welding and possible economies.

WASTE HEAT BOILERS—Foster Wheeler Corp., New York, has issued a bulletin describing its waste heat boilers, which are of a new type. It shows several designs, with illustrations of installations and details of construction. It is particularly applicable to internal combustion engines and for marine use.

DEOXIDIZER—Vanadium Corp. of America, New York, features in a current bulletin its steel deoxidizer composed of aluminum, silicon and iron. Its advantages and proper application are described.

STEEL PIPE—Youngstown Sheet & Tube Co., Youngstown, O., has issued a new catalog on pipe, which, in addition to tables of sizes, weights and other data, includes a brief description of the making of steel and steel pipe. The company also has printed a standard pipe reference book of value to users of pipe. It includes data on tubing materials and information on plumbing and heating practices by an authority. Pipe installation is covered thoroughly, with technical matter omitted.